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1997 Job Performance Report
Program F-71-R-22

REGIONAL FISHERIES MANAGEMENT INVESTIGATION
PANHANDLE REGION (Subprojects I-A, II-A, III-A, IV-A)

PROJECT I.	SURVEYS AND INVENTORIES
Job a.	Panhandle Region Mountain Lakes Investigations
Job b.	Panhandle Region Lowland Lakes Investigations
Job c.	Panhandle Region Rivers and Streams Investigations
PROJECT II.	TECHNICAL GUIDANCE
PROJECT III.	HABITAT MANAGEMENT
PROJECT IV.	POPULATION MANAGEMENT

By

Jim Fredericks, Regional Fishery Biologist
Jim Davis, Regional Fishery Biologist
Ned Horner, Regional Fishery Manager
Chip Corsi, Natural Resource Biologist

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1997 ANNUAL PERFORMANCE REPORT

State of:	Idaho	Program:	Fisheries Management F-71-R-22
Project:	I-Surveys and Inventories	Subproject:	I-A Panhandle Region
Job No.:	a	Title:	Mountain Lakes Investigations
Contract Period:	July 1, 1997 to June 30, 1998		

ABSTRACT

We conducted mountain lake surveys on Hidden Lake (Boundary County) and Harrison Lake (Bonner County) to assess the current status of the fisheries. We used gill nets and angling to evaluate size structure, abundance, and growth of stocked fish. We also estimated the general level of human use the lakes received. Westslope cutthroat trout and rainbow trout were both abundant in Hidden Lake. Fish ranged from 155 to 335 mm in length and weighed from 37 to 347 g. Anglers present during the survey caught 53 fish in 9.5 h of fishing for catch rates of 5.6 fish/h. There was no complete trail around Hidden Lake, and only three campsites, indicating a low to moderate level of use. In contrast, Harrison Lake was a heavily used lake. There were 12-13 campsites and a well-used, complete trail around the lake. Westslope cutthroat trout were moderately abundant. Surveyed anglers caught seven fish in 14 h of fishing for a catch rate of 0.5 fish/h. Fish ranged from 108 to 282 mm in length. Growth was slow, with fish generally achieving 200 mm at around age-5.

Authors:

Jim Fredericks
Regional Fishery Biologist

Ned Horner
Regional Fishery Manager

OBJECTIVES

1. Evaluate stocking rate and stocking frequency of mountain lakes in relation to observed angler use, catch rates, growth rates and fish abundance as determined by angling and gillnetting.

2. Establish limnological and water chemistry baselines to determine potential productivity and to determine future changes.

3. Provide diverse angling opportunities by maintaining a stocking program with different species of salmonids in Panhandle Region mountain lakes.

INTRODUCTION

Around 63 mountain lakes are stocked with fish in the Panhandle Region. Species stocked include westslope cutthroat trout, domestic kamloops rainbow trout, golden trout and grayling. The majority are stocked as fry at a density of around 620 fish/ha. Most lakes are stocked on alternate years, although the heavily used, highly accessible lakes are stocked each year. Most lakes are stocked by Idaho Department of Fish and Game (IDFG) volunteers by backpack or horseback. In addition, a few lakes with motorized vehicle access receive extensive fishing pressure and are, therefore, stocked each year with catchable rainbow trout. Mountain lake surveys are conducted by departmental personnel with the primary objective of evaluating the current stocking schedule.

METHODS

The IDFG standard mountain lake survey procedure was used to survey Hidden and Harrison lakes. Hidden Lake was surveyed on July 26-27, and Harrison Lake was surveyed on August 1-2, 1997.

Standard lake surveys entail sampling and/or documenting presence of fish and other aquatic biota, limnological sampling, and a recreational use survey. We collected fish samples with floating and sinking experimental gill net sets, and conventional angling methods. Scales were collected for age analysis, and stomach contents were examined for diet analysis. We also recorded information pertaining to the presence of amphibians and aquatic invertebrates. Physical characteristics surveyed included the type of lake, aspect, depth profile and inlet/outlet documentation. Chemical characteristics surveyed included alkalinity, conductance, transparency, pH, and temperature. The recreational use survey included the quality, and level of use of access and camping facilities, and a creel survey of anglers present (including our own angling efforts) to assess catch rates, species composition, and size of angled fish.

RESULTS AND DISCUSSION

Hidden Lake

Lake Description

Hidden Lake is an approximately 20 ha lake in the Smith Creek drainage (a Kootenai River tributary) of the Selkirk Mountains in Boundary County, Idaho. The lake is accessed by an approximately 2 km, well maintained trail, however, there is only a partial unmaintained trail around the lake. Much of the recreation on Hidden Lake seems to be on a day-use basis. Camping facilities are relatively limited for the size of the lake, with only three campsites and fire rings.

Hidden Lake is a glacial cirque lake with a northeastern exposure, and a steep shoreline of timber, brush, and boulders. The lake is a deep (over 75% > 6 m deep), oligotrophic system, with a secchi disc transparency of 11.5 m. Chemical limnology analysis indicated an alkalinity of 5 mg/L, specific conductance of 9.5 μmhos (@ 25°C), and a pH of 6.5.

Fishery Characteristics

The Hidden Lake fishery is supported primarily by fry stocking. There is one small, very high gradient inlet to Hidden Lake, with no accessible spawning habitat, and one outlet with approximately 2 meters of accessible, poor quality spawning habitat. Supplementation has consisted of approximately 620 fry/ha each year, with an annually alternating schedule of westslope cutthroat trout and rainbow trout (Table 1).

We caught a total of 46 cutthroat trout, of which 12 were gill netted and 34 were angled. Length of cutthroat trout ranged from 150 to 335 mm (Figure 1). Based on scale and otolith analysis, cutthroat trout ranged from age-2 to age-6. These estimated ages correspond to cutthroat fry plants in 1991, 1993 and 1995, and are indicative of moderate growth rates, with fish reaching stock-size (200 mm) at around age-3. Condition factor (wt * 10^5 / Length^3) of cutthroat trout ranged from 0.78 to 1.04, with a mean of 0.93. These values are within typical ranges reported by Carlander (1969).

We caught a total of 22 rainbow trout, of which 13 were gill netted and nine were angled. Length of rainbow trout ranged from 210 to 297 mm (Figure 1). All rainbow trout were estimated to be either age-3 or age-5, with the majority being stocked in 1994 (age-3). This age-class showed variable growth, with total length ranging from 200 to 300 mm. The length/weight relationship of rainbow trout was comparable to cutthroat trout (Figure 2). Condition factor of rainbow trout ranged from 0.84 to 0.98 with a mean of 0.92.

During the survey on July 25-26, 1997 (Friday-Saturday), there were four anglers, excluding ourselves, who fished the lake. None of these visitors were overnight campers. Surveyed anglers (including our own angling efforts) fished a total of 9.5 hours and caught 53 fish, for an average catch rate of 5.6 fish/h. Based on the catch rates, rising fish, and fish observed near the shoreline, fish abundance was rated as high. We observed a high abundance of emergent chironomids and a moderate abundance of trichoptera larvae. Stomach analysis indicated fish were feeding largely on these two insect taxa during the survey period.

Summary and Recommendation

We did not see overt indications of an overstocked, overcrowded population. Condition factors and growth rates were both within normal ranges. This would suggest the current stocking rate of 620 fry/ha was appropriate. However, because the lake was mistakenly not stocked in 1996, actual fish density during the survey was lower than stipulated by the stocking schedule. Furthermore, the lack of campsites and a complete trail around the lake, as well as the number of people we saw during the survey all suggest Hidden Lake does not receive the use of many alpine lakes, despite its relative accessibility. The age-frequency of fish collected suggests that exploitation is not limiting the quality of the fishery.

In summary, the results of the 1997 survey indicate that Hidden Lake could be stocked on an alternate year basis. A decrease in stocking would likely not jeopardize the quality of the fishing, and could possibly benefit growth rates. Because the lake was last stocked in 1995 and 1997, Hidden Lake could logically be incorporated into the odd-year stocking rotation. Both species of trout seem to do well in Hidden Lake based

Table 1. Stocking history of Hidden Lake, Idaho, 1986 to 1997.

Year	Number Stocked	Density (fish/ha)	Stock of Fish	Comments
1986	6,000	120	westslope cutthroat	
1987	12,500	250	westslope cutthroat	
1988	12,096	242	kamloops rainbow	
1989	3,082	62	kamloops rainbow	
1989-b	12,495	250	westslope cutthroat	
1990	12,928	258	kamloops rainbow	
1991	12,500	250	westslope cutthroat	
1992	8,440	169	kamloops rainbow	
1993	12,000	242	westslope cutthroat	
1994	12,500	250	kamloops rainbow	
1995	12,500	250	westslope cutthroat	
1996	0			not stocked, by mistake
1997	12,500	250	westslope cutthroat	

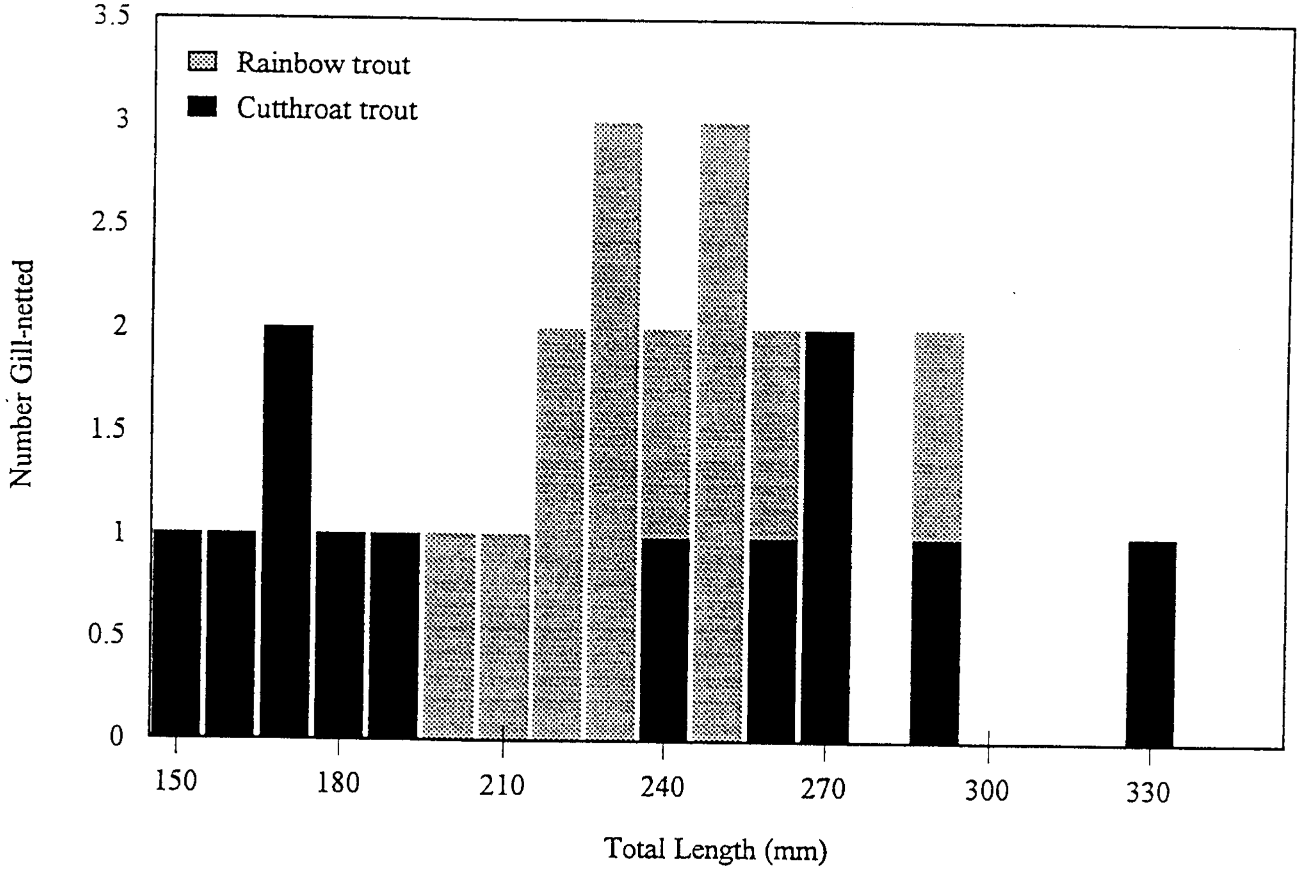

Figure 1. Length frequency of rainbow and cutthroat trout collected in gill nets from Hidden Lake, Idaho, on July 26, 1997.

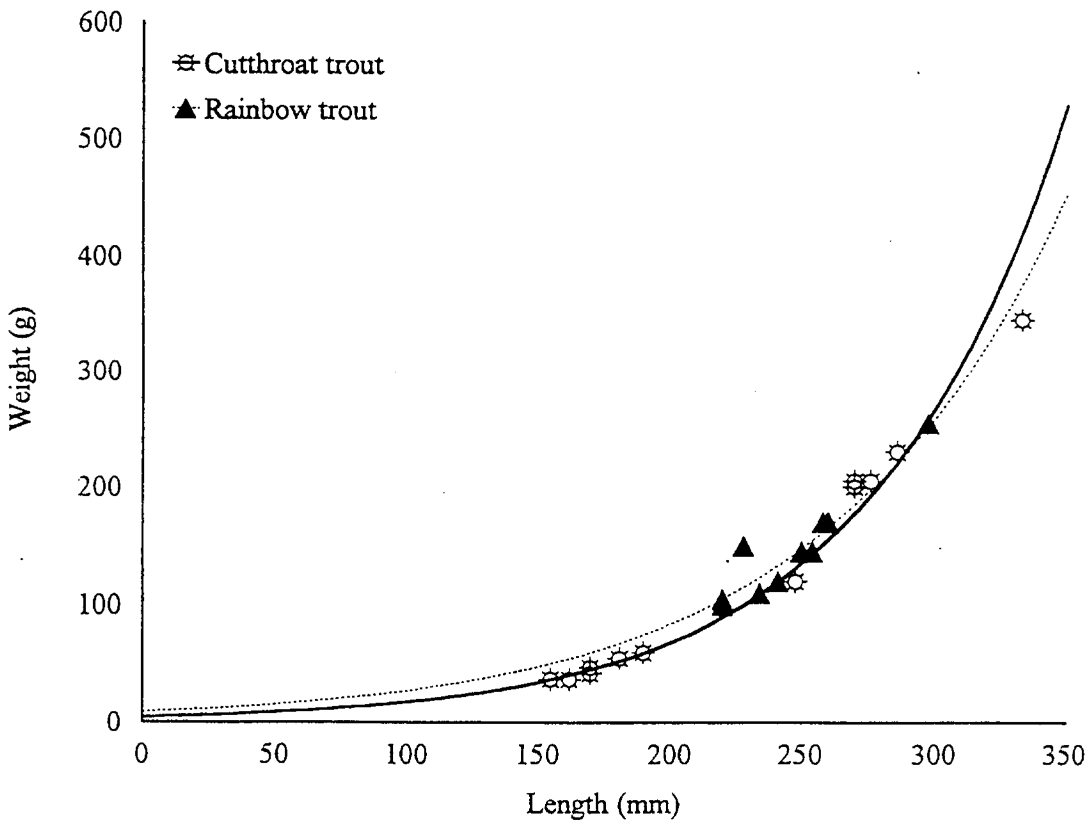

Figure 2. Length/weight relationship for cutthroat trout (solid line) and rainbow trout (dashed line) collected in July, 1997 from Hidden Lake, Idaho.

on this survey. Rainbow trout appear to have slightly better growth than cutthroat trout. Age-3 rainbow trout were comparable in size to age-4 cutthroat trout. This is consistent with research on alpine lakes in Colorado, which found rainbow trout grew more rapidly at early ages, but did not live as long as cutthroat trout (Nelson 1988). In the Panhandle Region, nearly all alpine lakes are stocked with westslope cutthroat trout, or westslope cutthroat trout *and* rainbow trout. To provide a unique opportunity, Hidden Lake could be managed as an alpine lake rainbow trout fishery.

Recommendation-Reduce current level of stocking in Hidden Lake to 620 rainbow trout fry/ha on odd years only, beginning in 1999.

Harrison Lake

Lake Description

Harrison Lake is a 12 ha lake at an elevation of 1,884 m in the Selkirk mountains of Boundary County, Idaho. Harrison Lake is the origin of the Pack River, the second largest tributary to Pend Oreille Lake. The lake is accessed by an approximately 3 km, well maintained trail. There is a well-used, complete trail around the lake. Harrison Lake appears to get many more overnight visitors than does Hidden Lake, and we counted 12-13 campsites and fire pits. We saw a moderate amount of litter in the area, primarily in or around the fire pits.

Harrison Lake is a glacial cirque lake, with an east-facing exposure, and a steep shoreline comprised of about 1/3 talus and 2/3 alpine vegetation. Extensive bathometric mapping by the U.S Forest Service (USFS) in 1979 indicates a moderately deep lake, with about 2/3 of the surface area >6 m of depth, and a maximum depth of around 19 m. The lake is an oligotrophic system with a secchi disc visibility of 10 m. A dissolved oxygen profile recorded by the USFS in 1979 confirms a well oxygenated hypolimnion. Chemical limnology analysis indicates a specific conductance of 6.25 μmhos (@ 25°C), a pH of 6.5, and an alkalinity of around 10 mg/L.

Fishery Characteristics

As with Hidden Lake, the Harrison Lake fishery is primarily supported by fry stocking. Around 7,250 cutthroat trout fry (620/ha) are stocked each year (Table 2), generally by volunteer backpackers. There are several small, high gradient, intermittent tributaries that have no spawning habitat, and a single outlet with little or no suitable spawning habitat.

We caught a total of 20 cutthroat trout in the sampling effort (16 in gill nets, 4 by angling). Length ranged from 108 to 282 mm (Figure 3). Based on scale and otolith analysis, these fish ranged from three to seven years old, with widely varying growth among age-classes. Stock-size fish (>200 mm) were generally at least five years old. Condition factor of cutthroat trout ranged from 0.51 to 1.01, with a mean of 0.73. These condition factors were significantly lower than those of cutthroat trout from the Hidden Lake survey (Student's t-test, $P<0.05$, df = 26).

Table 2. Stocking history of Harrison Lake, Idaho, 1986 to 1997.

Year	Number Stocked	Density (fish/ha)	Stock of Fish	Comments
1986	6,870	237	westslope cutthroat	
1987	7,264	250	westslope cutthroat	
1988	7,250	250	westslope cutthroat	
1989	7,479	258	westslope cutthroat	
1990	7,250	250	westslope cutthroat	
1991	7,246	250	westslope cutthroat	
1992	7,250	250	westslope cutthroat	
1993	7,250	250	westslope cutthroat	
1994	7,250	250	westslope cutthroat	
1995	7,266	250	westslope cutthroat	
1996	7,273	250	westslope cutthroat	
1997	7,250	250	westslope cutthroat	

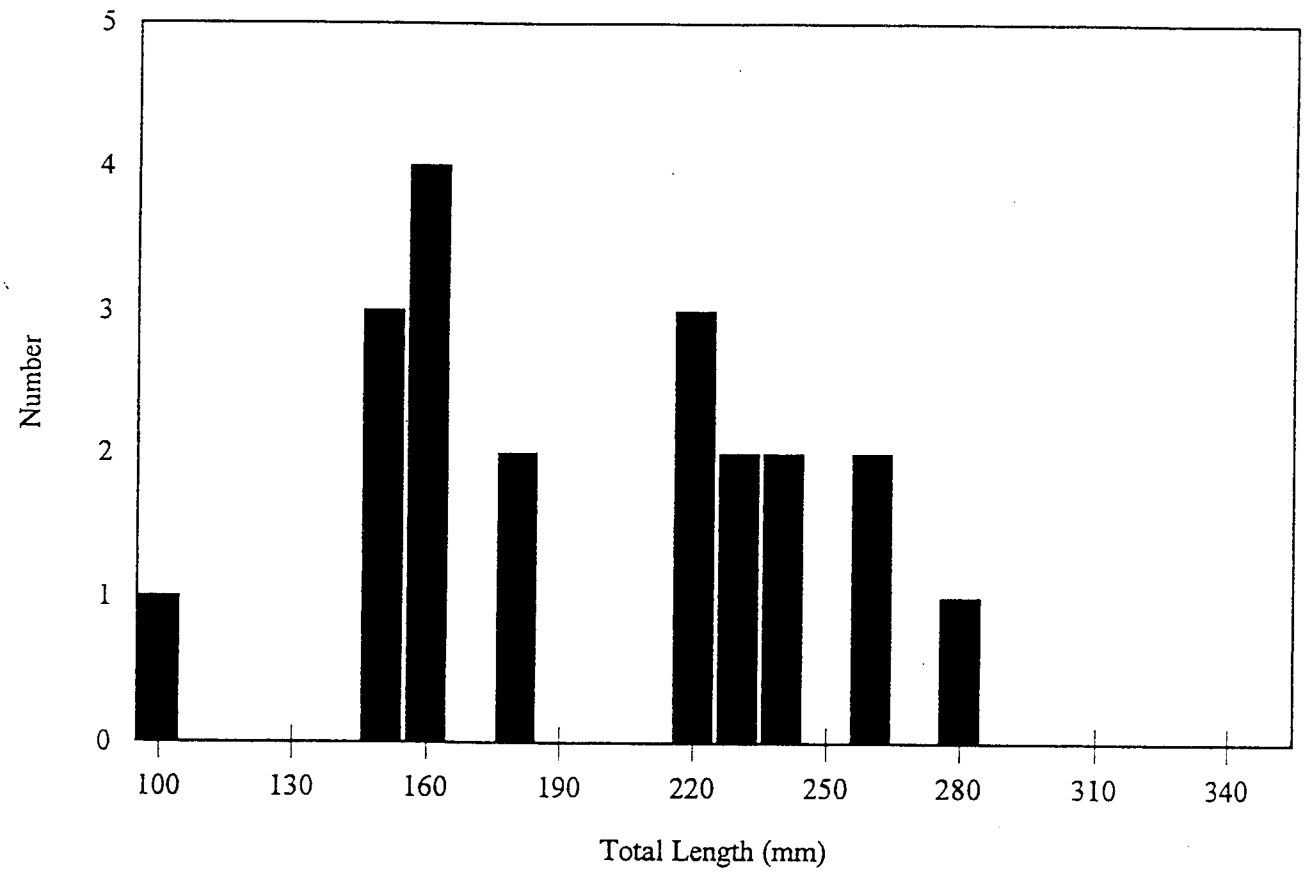

Figure 3. Length frequency of cutthroat trout collected by angling and gillnetting from Harrison Lake, Idaho, on August 1, 1997.

During the survey on July 31-August 1, 1997 (Thursday-Friday), a total of four anglers, excluding ourselves, fished Harrison Lake. Surveyed anglers (including our own angling efforts) fished a total of 14 hours and caught seven fish, for an average catch rate of 0.5 fish/h. Based on the catch rates, rising fish, and fish observed near the shoreline, fish abundance was rated as moderate. We observed a high abundance of dipterans (chironomids, black flies, and mosquitos) and low to moderate abundance of trichoptera larvae.

Summary and Recommendation

The number of campsites, the quality of the trail around the lake, and the number of people observed during the survey demonstrate high human use of Harrison Lake. Although this survey is not sufficient to gage the level of angling use, an extensive USFS survey in 1979-80 rated overall use as "heavy", and indicated many visitors include fishing in their activities. This high level of use suggests annual fry plants are appropriate for Harrison Lake. We saw no evidence that stocking 620 fry/ha annually resulted in an overabundance of fish in poor condition. The observed slow growth may be more related to the length of the growing season than to the density of fish. The effect of the current stocking level on growth could possibly be elucidated by stocking every other year; however, the information gained from the experiment may not warrant the follow-up survey and angler creel survey necessary to evaluate the costs or benefits.

<u>Recommendation</u> - Continue current stocking program in Harrison Lake

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Nelson, W.C. 1988. High lake research and management in Colorado. Colorado Division of Wildlife. Special Report Number 64.

1997 ANNUAL PERFORMANCE REPORT

State of:	Idaho	Program:	Fisheries Management F-71-R-22
Project:	I-Surveys and Inventories	Subproject:	I-A Panhandle Region
Job No.:	b	Title:	Lowland Lake Investigations

Contract Period: July 1, 1997 to June 30, 1998

ABSTRACT

We used a midwater trawl to estimate the kokanee population in Coeur d'Alene Lake in August. Age-3 kokanee density was 25 fish/ha. Age-2 kokanee were very low in abundance and estimated at only 10/ha. The mean size of spawning kokanee was 306 mm and 289 mm for males and females, respectively, which is the largest mean spawner size since early 1970's. We estimated a potential egg deposition of 53.6 million eggs.

We counted 33 chinook redds in the Coeur d'Alene River drainage and 24 in the St. Joe River, for a total of 57. All redds were left undisturbed to provide natural production. Only four adult chinook salmon were captured and spawned at the Wolf Lodge Creek weir, resulting in an egg take of 6,900 green eggs for incubation and rearing. A total of 12,100 age-0 chinook salmon with an adipose fin clip were stocked at the Mineral Ridge ramp in Wolf Lodge Bay on June 24.

We checked kokanee anglers in the Wolf Lodge Bay area of Coeur d'Alene Lake to evaluate the extent of incidental harvest of juvenile chinook salmon. Sixty-five anglers creeled a total of 625 kokanee and no juvenile chinook. The majority of fishing parties surveyed included at least one angler who was aware of the possibility of incidental chinook catch and was confident in their ability to distinguish juvenile chinook from kokanee.

We collected 297 smallmouth bass in the northern bays of Coeur d'Alene Lake. The modal length increment was 180-189 mm. Length-at-age analysis indicates that smallmouth bass growth was similar to mean growth rates from northern latitudes, with fish generally achieving the legally harvestable size (305 mm) at five years of age. The largest fish collected was 434 mm and estimated to be seven years old.

We used a midwater trawl to estimate the kokanee population in Spirit Lake in August. The age-3 population was estimated at 6,500 fish, a density of 11 fish/ha, and the age-2 kokanee population was estimated at 65,500 fish, a density of 115 fish/ha.

We used gill nets and conventional angling equipment to assess relative abundance, size structure, and the total population of lake trout and bull trout in Upper Priest Lake. Anglers were recruited to fish intensively during a two-day effort in mid-August to assess the feasibility of using sportfishing as a method of reducing the lake trout population in the lake without damaging the bull trout population. In addition we implanted sonic tags in nine fish to assess seasonal movements . In four separate efforts from June through October, we collected 152 lake trout ranging in size from 193 to 980 mm (TL). Of these, 121 were collected in gill nets, and the remaining were collected with conventional fishing equipment. Mark-recapture analysis indicates a lake trout population of approximately 700 fish >320 mm. We collected 20 bull trout ranging in size from 190 to 760 mm. Twelve

of these fish were collected in gill nets. The ratio of lake trout to bull trout was much higher in the sample collected by sportfishing (approximately 5:1) than the ratio in the gill nets would have suggested (approximately 10:1). Seven of the sonic tagged lake trout remained in Upper Priest Lake, moving extensively throughout the lake, but not exhibiting any clear spawning aggregations. Two lake trout disappeared from the upper lake. One of these was subsequently located near the Twin Islands in Priest Lake in mid-October, only to reappear in Upper Priest Lake in late November.

A fisheries volunteer tagged 47 additional lake trout in Priest Lake. A total of seven lake trout tagged in previous years were caught and reported in 1997. Lake trout were recaptured an average of 3 km from the site of original capture. Growth ranged from 0 to 6 cm per year, with an average annual growth of 1.8 cm/year.

We conducted standard lake surveys on Shepherd, Robinson, and Brush lakes with the objective of evaluating introduced bluegill populations. Bluegill have established reproducing populations in all three lakes surveyed. Based on the standard sampling protocol, bluegill have increased from non-existence to the first or second most abundant species. Based on back-calculation of scales, growth was similar to a North American average, and bluegill generally achieved a "quality" size (200 mm) around seven years of age.

Officers checked a total of 790 residents and 335 non-residents at 35 regional lakes, ponds and sloughs in 1997. A total of 2,136 angler hours were represented.

Authors:

Jim Fredericks
Regional Fishery Biologist

Ned Horner
Regional Fishery Manager

OBJECTIVES

1. Determine stock status of kokanee in Coeur d'Alene Lake.
2. Estimate chinook harvest in Coeur d'Alene Lake during fishing derbies.
3. Count chinook redds in the Coeur d'Alene and St. Joe rivers and estimate production of wild chinook.
4. Trap and artificially spawn adult chinook in Wolf Lodge Creek for hatchery incubation and rearing.
5. Assess the extent of incidental juvenile chinook harvest by kokanee anglers in Coeur d'Alene Lake.
6. Assess growth rates and population structure of smallmouth bass in Coeur d'Alene Lake.
7. Determine stock status of kokanee in Spirit Lake.
8. Determine stock status of lake trout and bull trout in Upper Priest Lake.
9. Monitor movements of sonic tagged lake trout from Upper Priest Lake.
10. Evaluate feasibility of reducing the lake trout population in Upper Priest Lake using recreational angling.
11. Continue Priest Lake volunteer lake trout tagging program to gather exploitation and growth information.
12. Evaluate bluegill populations in Brush, Robinson, and Shepherd lakes.
13. Summarize conservation officer creel survey information collected from regional lakes.

METHODS

Fish Population Characteristics

Coeur d'Alene Lake

Kokanee Population Estimate-We used a mid-water trawl, as described by Bowler et. al. (1979), Rieman and Myers (1990), and Rieman (1992), to estimate the kokanee *Oncorhynchus nerka* population in Coeur d'Alene Lake. Twenty-four transects were trawled in 1997 during the dark phase of the moon on August 3-4. Trawl transects were selected using a stratified random sample design and were in identical locations (as near as possible) to those used in previous years (Figure 1). Kokanee were measured and weighed, and scale and otoliths were collected from representative length groups for age analysis.

We used two sinking gill nets to estimate mean length of male and female kokanee spawners. Gill nets were set at depths of 3-10 m near Higgins Point on the evening of December 4 and pulled the morning of December 5. Potential egg deposition (PED) was estimated as the number of female kokanee spawners (half the mature population based on midwater trawling) multiplied by the average number of eggs produced per female. The average number of eggs produced per female kokanee was calculated using the following length to fecundity regression (Rieman 1992):

$$Y = 3.98x - 544$$

Where: x = mean length of female kokanee spawners (mm)
Y = mean number of eggs per female

Chinook Salmon Abundance-As in previous years, we utilized a combination of hatchery-reared and naturally-produced juvenile chinook salmon *O. tshawytscha* to propagate the chinook population in Coeur d'Alene Lake. We estimated the natural production using redd counts, an estimate of 4,000 eggs per redd, and a mean egg-to-smolt survival of 10%. Based on these figures, we estimated that a total of 100 redds were needed to produce the target of 40,000 naturally-produced smolts. Department personnel used a helicopter to conduct chinook redd surveys in the Coeur d'Alene River, North Fork Coeur d'Alene River, South Fork Coeur d'Alene River, Little North Fork Coeur d'Alene River and St. Joe River on October 7, 1997. Redds were enumerated, and general redd locations were recorded for relocation from the ground.

As in previous years, we used a weir on Wolf Lodge Creek to collect eggs from migrating adult chinook salmon. The weir was installed beneath the Interstate 90 bridge on August 20 and removed October 17.

We conducted creel surveys on the three chinook derbies (the traditional December derby was canceled because of the low numbers of chinook throughout the year) in 1997. We collected angler logs to evaluate size structure and the percentage of hatchery chinook in the 1997 catch.

We estimated the hypothesized percentage of hatchery fish in the angler catch since 1984 based on the number of chinook stocked, the number of chinook redds counted, and the following estimated survival

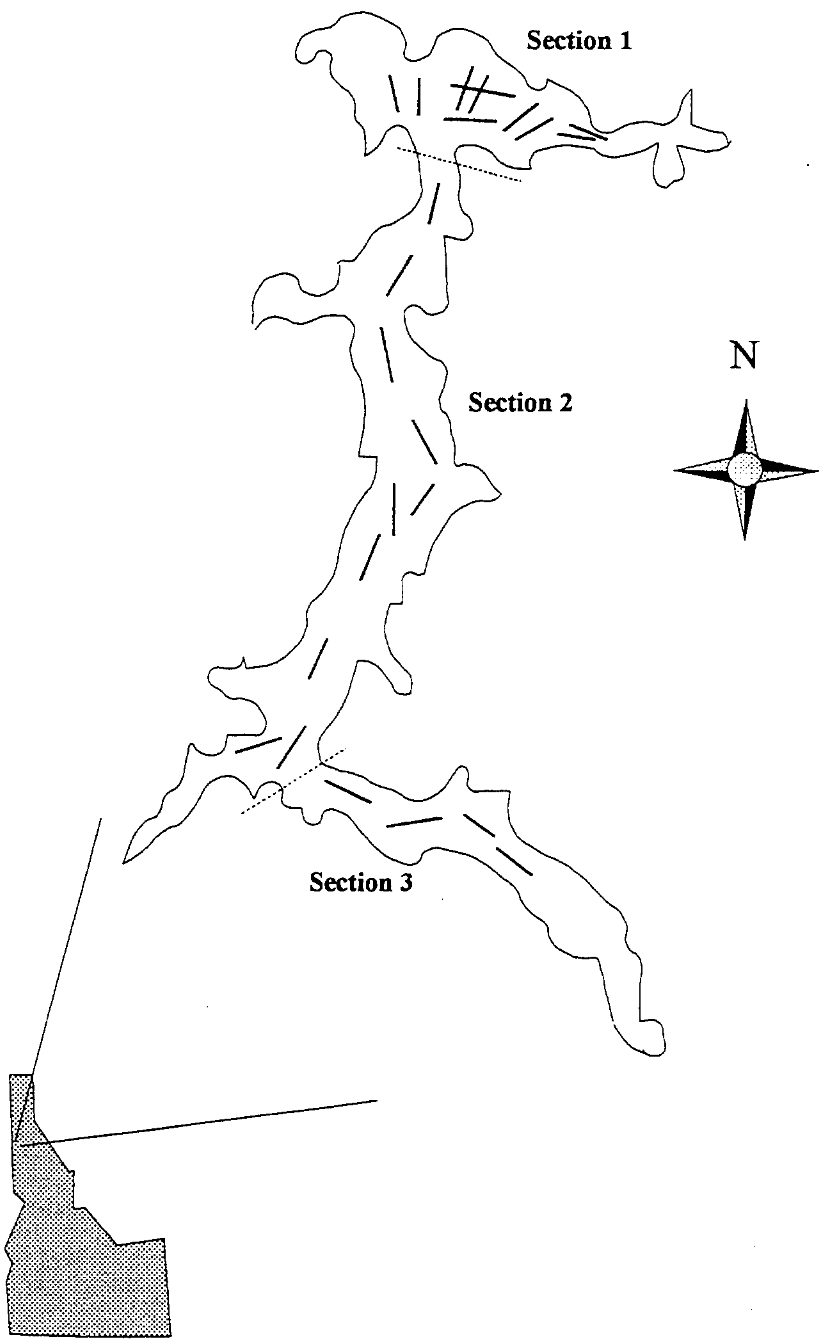


Figure 1. Location of the midwater trawling transects in three sections of Coeur d'Alene Lake, Idaho, used to estimate the kokanee population.

rates: 10% from wild egg to fry; 10% from age-0 to age-1; 50% from age-1 to age-2; 25% from age-2 to age-3; 5% from age-3 to age-4. These estimates are primarily based on the hypothesis that outmigration and predation cause high mortality through the first two summers, and mortality in the older fish is primarily from harvest and the percentage of fish maturing at age-2 and age-3.

Chinook-Kokanee Relationship-We used historic kokanee trawl data, chinook stocking and redd count data since 1982, to evaluate the relationship between chinook abundance and kokanee abundance. We used linear regression and population trend lines in an effort to determine the level of chinook stocking that achieves the optimum age-2 kokanee density. Age-2 kokanee were used for the analysis because this seems to be the age which provides the most accurate estimate of a kokanee age-class. Optimum kokanee density was arbitrarily set at 50 to 150 fish/ha, based on an optimum adult (age-3) density of 30-50 fish/ha (Rieman and Maiolie 1995) and an approximate mortality from age-2 to age-3 of 50%.

Incidental Juvenile Chinook Harvest Assessment-We checked kokanee anglers in the Wolf Lodge Bay area of Coeur d'Alene Lake from September 28 to October 21 to address concerns of incidental harvest of juvenile chinook salmon by kokanee anglers. Anglers were contacted at either the Mineral Ridge or Higgins Point boat ramp following a completed trip. We asked all anglers if they had caught juvenile chinook, and if they were aware of the possibility of catching juvenile chinook and believed they (or someone on the boat) were capable of distinguishing kokanee from juvenile chinook. We then examined all fish in angler creels.

Smallmouth Bass Population Assessment-As part of a fish exchange with Washington Department of Wildlife, we collected smallmouth bass *Micropterus dolomieu* in the northeastern bays of Coeur d'Alene Lake. We weighed, measured, and collected scales from fish of all size classes sampled.

Spirit Lake

Kokanee Abundance-We used a midwater trawl on the night of August 5 to estimate the kokanee population and relative year-class abundance in Spirit Lake. We trawled the same five transects that have been trawled in previous years (Figure 2). Kokanee lengths and weights were recorded, and scale and otoliths were collected from representative length groups for age analysis.

Upper Priest Lake

Netting-We collected lake trout *Salvelinus namaycush* and bull trout *S. confluentus* from Upper Priest Lake (Figure 3) during four sampling efforts from early June through mid-October in 1997. Sampling dates were June 2-4, July 14-16, August 14-15, and October 15. During the June and July efforts, we used a variety of net types in an attempt to determine the most effective gear for collecting lake trout, while minimizing injury to lake trout and bull trout. Initially, we used three types of sinking gill nets: 1) experimental monofilament (46 x 2 m with six panels ranging from 1.8 to 6.4 cm bar measure mesh; described in IDFG Fisheries Survey Manual); 2) experimental multifilament (61 x 2 m with three panels ranging from 1.3 to 3.8 cm mesh); and 3) single panel one-inch (46 x 2.4 m). Our hope was that we would have high catch rates with small (2.5 cm

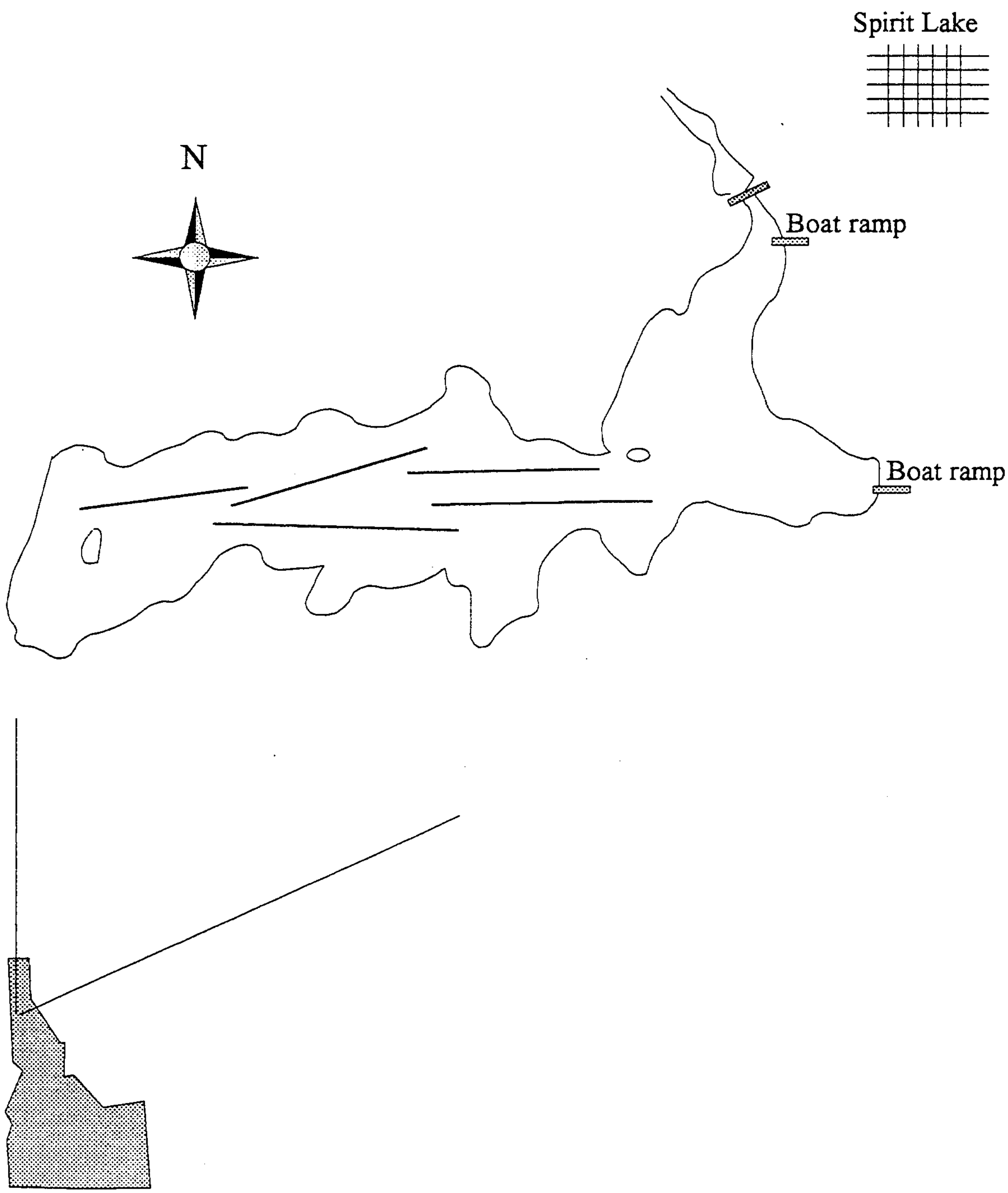


Figure 2. Location of the five midwater trawl transects used to estimate the kokanee population in Spirit Lake, Idaho.

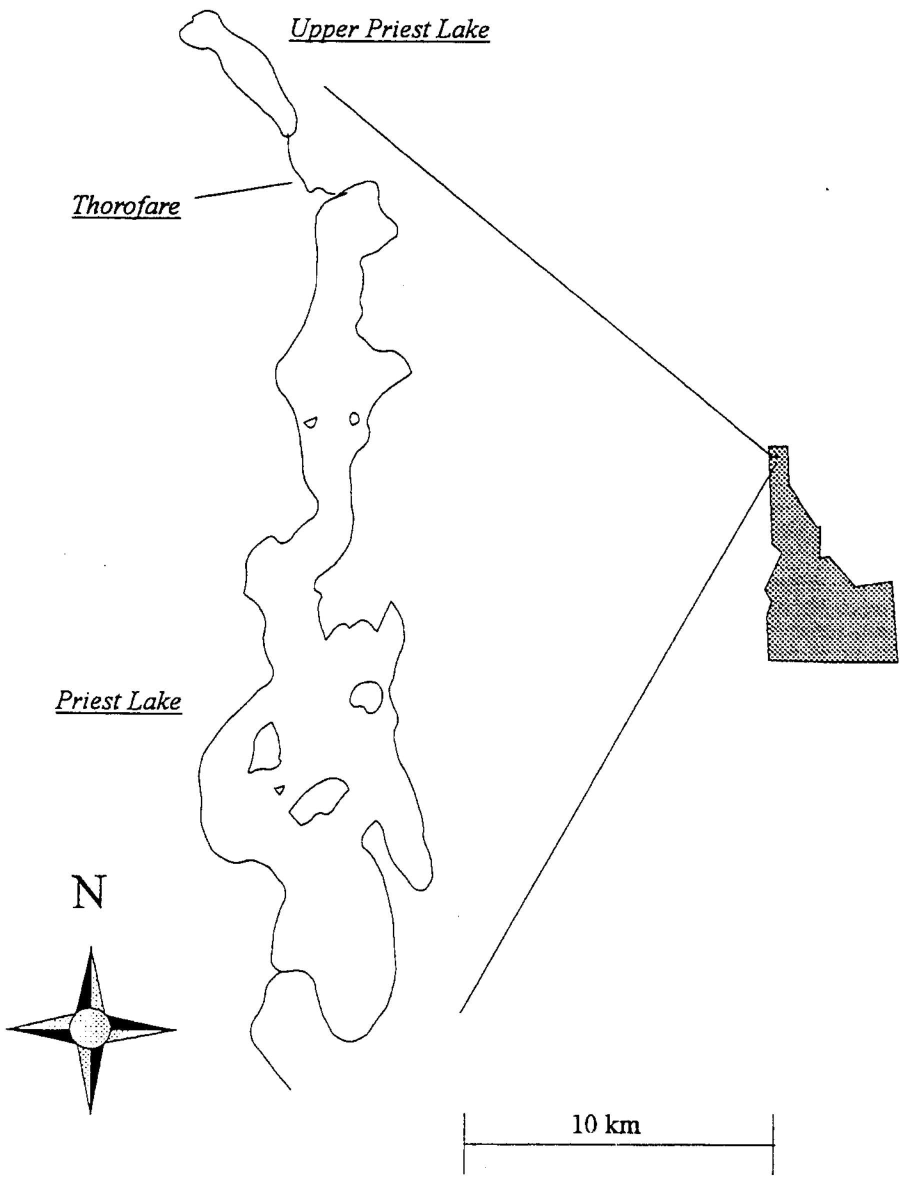


Figure 3. Location of Upper Priest Lake, the Thorofare, and Priest Lake, Idaho.

and smaller) mesh by "toothing" the fish, which would minimize mortality associated with gill-catches. We also used a trap net and baited hoop nets during the June sampling effort. During the August and October efforts, we used only experimental monofilament gill nets.

Nets were set perpendicular to shore at depths ranging from 3 to 33 m. The bathometry of Upper Priest Lake is U-shaped, with depth increasing rapidly with increasing distance from shore. For this reason, most gill nets were set on a slope and covered a range of depths. At each set, we recorded the depth, time, and type of net used and recorded location on a map. Gill nets were set around the shoreline of the entire lake over the four sampling periods. To minimize injury to fish, we set five to six gill nets, at a time which usually allowed enough time to check the nets every 45-60 minutes. Nets were set during daylight hours only.

Netted lake trout and bull trout were measured and weighed and allowed to recover in a live well. Lake trout greater than 320 mm were tagged with an individually numbered Floy spaghetti tag. The tags were inserted through the fish about 5-10 mm beneath the third (anterior) dorsal fin ray and secured with an overhand loop knot. Lake trout less than 320 mm were considered too small to effectively spaghetti tag and were sacrificed for stomach content and otolith samples. Fish were taken 200-300 meters from the site of capture and any other gill nets and released.

Angling-To determine if conventional fishing methods would be an effective means of collecting lake trout without causing unacceptable risk to bull trout, we recruited several anglers to participate in a two-day sampling effort, August 14 and 15. We specifically invited anglers with the equipment and knowledge to be effective on Upper Priest Lake. Although most participants had not fished the upper lake prior to the effort, the majority had extensive lake trout fishing experience on Priest Lake (e.g. two participants were lake trout fishing guides, and another is a volunteer lake trout tagger who has caught over 300 lake trout in Priest Lake since 1995).

Upper Priest Lake gets little fishing pressure for lake trout, and no single method has been shown to be the most effective as is the case with many fisheries. We, therefore, encouraged participants to utilize whatever techniques with which they were comfortable. Although most anglers trolled with downriggers near the bottom, others tried trolling at mid-depths and vertical jigging. To maximize catch rates, we allowed the use of bait (normally prohibited in catch-and-release waters) and multiple rods per angler. We required all hooks be barbless to prevent injury to bull trout. We issued spaghetti tags and a needle to each boat and instructed them on the tagging procedure. Anglers were instructed to tag only lake trout, to minimize stress, and possible mortality to bull trout. Participants recorded time fished, equipment used, and for all fish caught, the species, length, depth, and location of catch.

In addition to the two-day organized intensive fishing effort, we collected extensive angling data from May to November. We asked two anglers who avidly fish Upper Priest Lake (G. & K. Brockus) to maintain detailed catch records throughout the 1997 season which included date, time fished, species caught, and equipment used. They were also supplied with tags and a needle from September through November to continue tagging unmarked fish. In addition to the 1997 season, these anglers supplied catch records maintained since 1993, when they first began fishing Upper Priest Lake. We also included fish that we caught by angling in conjunction with the gillnetting effort in July.

Combined Mark and Recapture-Throughout the four sampling efforts and the additional angling effort contributed by the two anglers, we maintained records of the numbers of fish captured, tagged, released, recaptured, and any mortalities. This data was then used in a multiple mark-recapture population estimate.

Sonic Tagging-We implanted coded sonic tags in 10 lake trout to provide additional information on the movements of lake trout in Upper Priest Lake. Fish were collected with gill nets during the August 14 and 15 sampling effort. We attempted to utilize only mature fish that were likely to spawn during the fall of 1997. Based on length at maturity information from lake trout in Priest Lake, only lake trout of at least 500 mm (TL) were sonic tagged. Fish of this length were well in excess of the minimum weight suggested to accommodate the sonic tags (tag weight < 2% body weight; Winter 1983).

Surface water temperatures during the two days of sonic tagging were 20-21°C. Because lake trout were being caught from depths where temperatures were 5-10°C, we were concerned that thermal shock would jeopardize survival of tagged fish. To minimize thermal stress, we filled ice chests with water from the mouth of the Priest River where water temperatures were around 12°C. When a candidate fish for a sonic tag implant was caught, we immediately put the fish in a cold water-filled cooler and motored to the mouth of the Priest River where we performed the surgery. We used MS-222 to anaesthetize fish and placed them in a cradle so their abdomen was out of the water, but the gills were submerged. An incision just long enough to pass the transmitter was made about 1/3 of the way between the pelvic and pectoral fins and about 2-3 cm up from the ventral side of the fish. The transmitter was cleaned in alcohol, rinsed with distilled water, and inserted into the incision, which was then closed with four stitches using a half 4.0 (metric) chromic gut with a half round cutting tip needle. The incision was then coated with a nitrofurazone disinfectant. Lake trout were allowed to recover for 10-20 minutes and then released near the site of capture.

Priest Lake

Lake Trout Tagging-Forty-seven additional lake trout were tagged and released in 1997 as part of an ongoing tagging effort to quantify angler exploitation and help define the population dynamics of lake trout in Priest Lake. Lake trout were captured by angling, and a plastic Floy tag was placed in the dorsal musculature beneath the dorsal fin. All fish were caught and tagged by Randy Phelps, a volunteer angler. Catch location, date, fish length, and weight, and any comments regarding the health or release of the fish were recorded at the time of tagging along with the tag number. Fish were released back to the same water from where they were captured.

Some lake trout that were captured at greater depths (>35 m) and did not have the opportunity to void their swim bladder before reaching the surface, were assisted in their return to depth by inserting a small gauge hypodermic needle into the fishes swim bladder at a point midway between the anal vent and pelvic fins and midway between the ventral line and the bottom of the belly. The needle was inserted at a slight angle forward until air was heard escaping and the swim bladder was sufficiently evacuated for the fish to swim down on its own. We recorded the number of all tagged fish that underwent the deflation procedure to evaluate the survival of treated fish.

Standard Lowland Lake Surveys

We conducted standard lowland lake surveys on Brush, Robinson, and Shepherd lakes using procedures outlined in the standard lowland lakes survey manual. Brush Lake was gill netted and trapnetted on June 24-25, and electrofishing and limnological sampling was conducted on July 31. Robinson Lake was gill netted and trapnetted on June 23-24, and electrofishing and limnological sampling was conducted on July 31. Shepherd

Lake was gill netted and trapnetted on June 18-19, and electrofishing and limnological sampling was conducted on July 29.

The secondary objective of the lowland lake surveys was to evaluate bluegill *Lepomis macrochirus* populations that were stocked in 1989-90. In addition to the information collected during the standard surveys of Shepherd, Brush, and Robinson lakes, information was summarized and included from Rose and Kelso lakes, which were evaluated during lake surveys in 1995. We estimated length-weight relationships as Log_{10} Wt = a + b x Log_{10} total length. We then used the length-weight equation to calculate expected weight of a 200 mm bluegill in each lake. These weights were then compared with standard weight (Hillman 1982) to develop relative weight (W_r) estimates.

Where possible, we compared largemouth bass *M. salmoides* population characteristics (growth, PSD, W_r) from before and after the introduction of bluegill; however, because largemouth bass research in Idaho suggests we should not expect significant improvement in such indices (Dillon 1992), these comparisons are of limited value.

Angler Creel Surveys

Officer Creel Survey

In an ongoing program, Conservation Officers recorded impromptu creel survey information collected from various regional waters. These angler contacts were not part of any structured creel survey, but rather were associated with random license checks and other contacts with the fishing public.

RESULTS

Fish Population Characteristics

Coeur d'Alene Lake

Kokanee Abundance-Trawl results indicated low numbers of kokanee across all year-classes in comparison with previous years (Table 1). The 1995 year-class (age-2 kokanee) is the least abundant year-class on record. We estimated a total of 97,000 age-2 kokanee, compared with a previous 16 year mean of 2.3 million (95% CI= ± 544,000). The 1994 year-class (age-3) is also one of the lowest on record. We estimated a total of 242,300 age-3 kokanee, a density of 25 fish/ha. Age-1 kokanee (1996 year-class) were also low in abundance, but previous years have demonstrated the difficulty in accurately estimating abundance of age-1 kokanee. Consistent with previous years, highest age-0 kokanee densities were in the northern section of the lake (Table 2).

Table 1. Estimated abundance (millions) of kokanee made by mid`water trawl in Coeur d'Alene Lake, Idaho, from 1997 to 1980. To follow a particular year class of kokanee, read up one row and right one column.

Sampling	Age Class					
Year	Age 0+	Age 1+	Age 2+	Age 3/4+	Total	Age 3+/ha
1997	3,001,100	342,500	97,000	242,300	3,682,000	25
1996	4,019,563	30,278	342,369	1,414,144	5,806,354	147
1995	2,000,000	620,000	2,900,000	2,850,000	8,370,000	296
1994	5,950,000	5,400,000	4,900,000	500,000	12,600,000	52
1993	5,570,000	5,230,000	1,420,000	480,000	12,700,000	50
1992	3,020,000	810,000	510,000	980,000	5,320,000	102
1991	4,860,000	540,000	1,820,000	1,280,000	8,500,000	133
1990	3,000,000	590,000	2,480,000	1,320,000	7,390,000	137
1989	3,040,000	750,000	3,950,000	940,000	8,680,000	98
1988	3,420,000	3,060,000	2,810,000	610,000	10,900,000	63
1987	6,880,000	2,380,000	2,920,000	890,000	13,070,000	93
1986	2,170,000	2,590,000	1,830,000	720,000	7,310,000	75
1985	4,130,000	860,000	1,860,000	2,530,000	9,370,000	263
1984	700,000	1,170,000	1,890,000	800,000	4,560,000	83
1983	1,510,000	1,910,000	2,250,000	810,000	6,480,000	84
1982	4,530,000	2,360,000	1,380,000	930,000	9,200,000	97
1981	2,430,000	1,750,000	1,710,000	1,060,000	6,940,000	110
1980	1,860,000	1,680,000	1,950,000	1,060,000	6,500,000	110

Table 2. Kokanee density (fish/ha) estimates for each age class in each section of Coeur d'Alene Lake, Idaho, August 3-4, 1997.

Section	Age 0	Age 1	Age 2	Age 3	Total
1	1,234	19	20	27	1,300
2	61	36	9	30	136
3	6	53	3	8	70
Whole lake	311	35	10	25	382

Kokanee fry collected in the trawl ranged from 30 to 50 mm TL. Age-1 kokanee ranged from 90 to 159 mm, with a modal length of 130 mm. Age-2 fish ranged from 210 to 245 mm, with a modal length of around 225 mm. Size of the age-3 kokanee at the time of trawling ranged from 230 mm to 279 mm TL, with a modal length of 255 mm (Figure 4). Approximately 25% of the age-3 and older kokanee examined were immature and will probably mature at age-4. The standing stock of kokanee in Coeur d'Alene Lake was 5.7 kg/ha.

Based on the 1996 PED estimate and the 1997 age-0 estimate, egg-to-fry survival was only 0.84%, which is low in comparison to previous years (Table 3). Fortunately, the 1996 PED estimate was the highest to date, and therefore, the age-0 kokanee population estimate was within the normal range of estimates from the previous 16 years (mean ± 95% CI = 3.4 million ± 0.9 million).

We collected 380 kokanee spawners in two gill nets near Higgins Point, Wolf Lodge Bay. Female mean and modal lengths were 289 mm and 285 mm (TL), respectively (n=100, SD=9.2). Male mean and modal lengths were 306 mm and 300 mm, respectively (n=100, SD=12.0). Mean length of spawners was the largest it has been since the early 1970s (Figure 5). Because of the portion of immature age-3 fish, we subtracted 25% from the age-3+ total population estimate derived from trawling, and estimated female escapement at 90,900 fish. Mean fecundity was estimated at 590 eggs per female based on a mean female spawner length of 289 mm, and potential egg deposition was approximately 53.6 million eggs (Table 3). This is the lowest PED estimate to date and is well below the average for the past 16 years (mean ± 95% CI = 153 ± 43.6 million).

Chinook Salmon Abundance-Four adult chinook salmon, two females and two males, were collected in the Wolf Lodge Creek weir from September 19 to September 26 (Table 4). Of these, two were of hatchery origin and two were wild. The hatchery fish were released in 1994 (570 mm male) and 1995 (765 mm female) and were 2+ years and 3+ years old at maturity. A total of 6,900 green eggs were taken for hatchery incubation and rearing. An additional 4-8 chinook salmon were trapped at the weir; however, at least three of these were illegally moved upstream, and at least one was stolen from the holding area. Because of the vandalism, we installed a chain-link trap box (approximately 1 ½ m wide x 3 m long x 1 m tall) to provide additional security. We installed the trap box on October 3, but no chinook were trapped after September 26.

We counted 33 chinook salmon redds in the Coeur d'Alene River drainage and 24 in the St. Joe River, for a total of 57 redds (Table 5). All redds were left undisturbed to provide natural production. Conditions

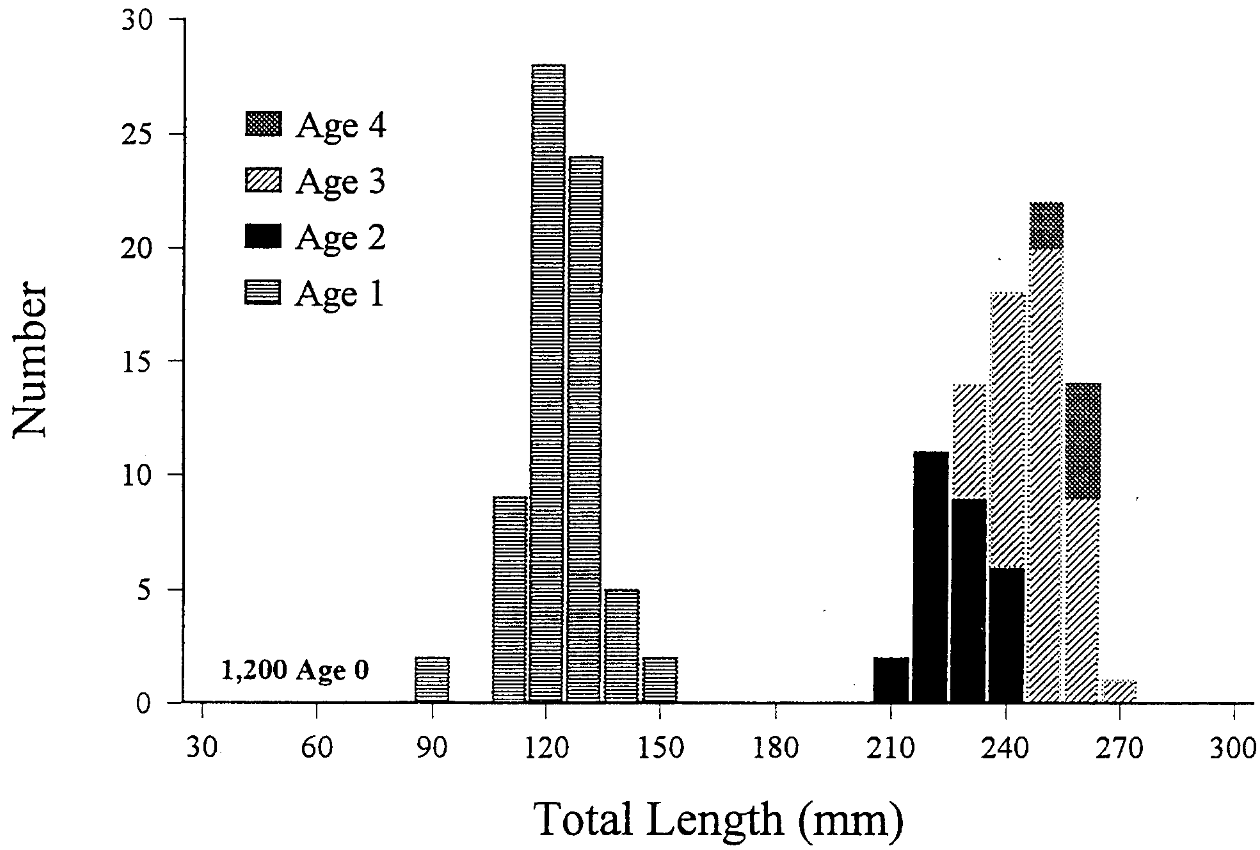


Figure 4. Length frequency and age distribution of kokanee collected by midwater trawling in Coeur d'Alene Lake, Idaho in August, 1997.

Table 3. Estimates of female kokanee spawning escapement, potential egg deposition, fall abundance of kokanee fry, and their subsequent survival rates in Coeur d'Alene Lake, Idaho, 1979 to1997.

Year	Estimated female spawning escapement	Estimated potential number of eggs ($x10^6$)	Fry estimate the following year ($x10^6$)	Percent egg to summer fry survival
1997	90,900	54		
1996	707,000	358	3.00	0.84
1995	1,425,000	446	4.02	0.90
1994	250,000	64	2.00	0.31
1993	240,000	92	5.95	6.46
1992	488,438	198	5.57	2.81
1991	631,500	167	3.03	1.81
1990	657,777	204	4.86	1.96
1989	516,845	155	3.00	1.94
1988	362,000	119	3.04	2.55
1987	377,746	126	3.42	2.71
1986	368,633	103	6.89	6.68
1985	530,631	167	2.17	1.29
1984	316,829	106	4.13	3.90
1983	441,376	99	0.70	0.71
1982	358,200	120	1.51	1.25
1981	550,000	184	4.54	2.46
1980	501,492	168	2.43	1.45
1979	256,716	86	1.86	2.20

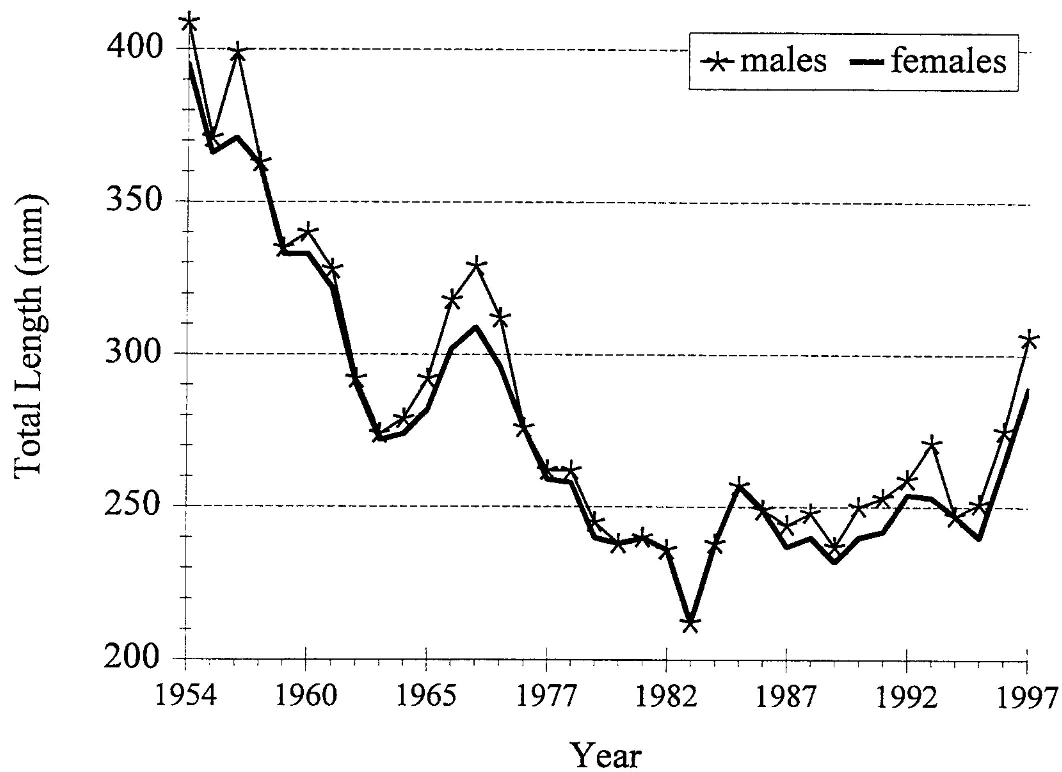


Figure 5. Mean total length of male and female kokanee spawners in Coeur d'Alene Lake from 1954 to 1997. Years where mean lengths were identical between sexes are a result of averaging male and female lengths.

Table 4. The number, relative percentage, and origin of chinook salmon trapped in Wolf Lodge Creek, Idaho, from 1984 to 1996.

		Natural fish trapped				Hatchery fish trapped				Year hatchery		
		M	F	Total		M	F	Total		fish		Fin
Year		No.	No.	No.	%	No.	No.	No.	%	stocked	Age	clip
1984	No natural fish return yet					22	13	35	100	1982	2	--
1985	No natural fish return yet					--	--	--	--	1982	3	--
1986	Unknown natural run, hatchery fish not clipped					19	27	46	100	1983	3	--
1987	3 year old fish from 1984 release were not marked					27	7	34	100	1984	3	--
	3 year old fish from 1984 release were not marked					15	37	52	--	1985	3	AD
						3	0	3	--	1985	3	LV
						5	1	6	--	1986	2	RV
1988	Total	25	20	45	42	23	62	58				
						3	6	9	--	1986	3	RV
						46	26	72	--	1987	2	AD
1989	Total	22	31	53	40	49	32	81	60			
						16	43	59	--	1987	3	AD
						23	5	28	--	1988	2	LV
1990	Total	40	43	83	49	39	48	87	51			
						1	6	7	--	1987	4	AD
						41	60	101	--	1988	3	LV
						64	41	105	--	1989	2	RV
1991	Total	50	34	84	28	106	107	213	72			
						2	3	5	--	1988	4	LV
						33	51	84	--	1989	3	RV
						22	3	25	--	1990	2	AD
1992	Total	36	33	69	38	57	57	114	62			
						1	1	2	--	1989	4	RV
						18	21	39	--	1990	3	AD
						3	1	4	--	1991	2	LV
1993	Total	6	7	13	22	22	23	45	78			

Table 4. Continued.

		Natural fish trapped				Hatchery fish trapped				Year hatchery		
		M	F	Total		M	F	Total		fish	Age	Fin
Year		No.	No.	No.	%	No.	No.	No	%	stocked	trapped	clip
						8	14	22		1990	4	AD
						24	49	73		1991	3	LV
						10	4	14		1992	2	RV
1994	Total	29	15	44	29	42	67	109	71			
						9	3	12		1991	4	LV
						14	7	21		1992	3	RV
1995	Total	66	31	97	75	23	10	33	25			
						1	3	4		1992	4	RV
1996	Total	8	33	41	92	1	3	4	8			
						1		1		1994	3	AD
							1	1		1995	2	LV
1997	Total	1	1	2	50	1	1	2	50			

Table 5. Chinook salmon redd counts in the Coeur d'Alene River drainage, St. Joe River, Lake Creek, and Fighting Creek, 1989-1997.

	Survey Date								
Location	9/29/89	11/1/90	10/31/91	10/20/92	10/18/93	10/10/94	10/04/95	10/7/96	10/7/97
Coeur d'Alene River									
Cataldo Mission to S.F. Cd'A River	--	41	11	29	80	82	45	54	18
S.F. Cd'A River to L.N.F. Cd'A River	--	10	0	5	11	14	14	13	5
L.N.F. Cd'A River to Steamboat Creek	--	--	2	3	6	1	1	13	6
Steamboat Creek to steel bridge	--	--	--	1	0	0	2	0	3
steel bridge to Beaver Creek	--	--	--	--	--	0	0	0	1
S. F. Cd'A River	--	--	--	--	--	13	--	4	0
L.N.F. Cd'A River	--	--	--	--	--	0	2	0	0
Subtotal	52	51	13	38	97	110	64	84	33
St. Joe River									
St. Joe City to Calder	--	4	0	18	20	6	1	59	20
Calder to Huckleberry C.G.	--	3	1	1	4	0	0	5	2
Huckleberry C.G. to Marble Creek	--	3	0	2	0	1	0	7	2
Marble Creek to Avery	--	0	0	0	0	1	0	0	0
Subtotal	0	10	1	21	24	8	1	71	24
Lake Creek	--	5	--	3	--	--	--	--	--
Fighting Creek	--	0	--	1	--	--	--	--	--
TOTAL	52	66	14	63	121	118	65	155	57

Table 6. Number, weight and lengths of fall chinook salmon released into Coeur d'Alene Lake, Idaho, 1982-1996.

Release date	Release site	Number released	Weight (kg)	Length (mm) mean	Length (mm) Range	Rearing hatchery	Stock of fish	Mark
07-19-82	MR[1]	28,700	767	137	125-150	Hagerman	Bonneville	None
10-05-82	I-90	5,700	273	150	130-170	Hagerman	Bonneville	None
Total 82		34,400	1,040					
08-09-83	I-90	30,100	289	109	80-130	Mackay	Bonneville	None
10-26-83	I-90	30,000	637	124	80-150	Mackay	Bonneville	None
Total 83		60,100	926					
10-29-84	I-90	10,500	373	150	80-190	Mackay & Mullan	Lake Michigan	None
10-16-85	I-90	11,100	409	136	--	Mackay & Mullan	Lake Michigan	Left ventral
10-17-85	I-90	7,400	273	143	--	Mackay & Mullan	Lake Michigan	Adipose
Total 85		18,500	682					
07-02-86	I-90	29,500	375	114	81-145	Mackay	Lake Michigan	Right ventral
07-01-87	I-90	59,400	900	119	62-155	Mackay	Lake Michigan	Adipose
07-16-88	I-90	44,600	977	133	95-180	Mackay	Lake Coeur d'Alene	Left ventral
07-06-89	I-90	35,000	636	126	100-165	Mackay	Lake Coeur d'Alene	Right ventral
07-10-90	MR	35,700	626	123	80-145	Mackay	Lake Coeur d'Alene	Adipose
07-10-90	MR	650[2]	11	123	80-145	Mackay	Lake Coeur d'Alene	Ad/right vent
Total 90		36,350	637					
07-09-91	MR	41,600	750	129	75-151	Mackay	Lake Coeur d'Alene	Left ventral
07-09-91	MR	1,050[2]	16	129	75-151	Mackay	Lake Coeur d'Alene	Ad/Left vent
Total 91		42,650	766					
07-07-92	MR	10,000	500	132	115-150	Mackay	Lake Coeur d'Alene	Right ventral
1993		0	No hatchery chinook were stocked in 1993					
06-06-94	I-90	17,267	910	134	110-180	Nampa	Lake Coeur d'Alene	Adipose
06-26-95	I-90	30,198	1,050	124	90-145	Nampa	Lake Coeur d'Alene	Left ventral
06-25-96	MR	39,700	1,510	122	85-145	Nampa	Lake Coeur d'Alene	Right ventral
06-24-97	MR	12,100	227	120	69-159	Nampa	Lake Coeur d'Alene	Adipose

[1] MR = Mineral Ridge boat ramp. [2] Sterile triploid fish from heat-shocked eggs.

for counting were relatively favorable (clear skies and clear water), and we were able to see most of the redds easily.

We stocked 12,100 age-0 chinook salmon at the Mineral Ridge boat ramp in Wolf Lodge Bay on June 26, 1997 (Table 6). All fish were marked with an adipose fin clip. A random sample of 184 chinook ranged in size from 69 to 159 mm TL, with a mean of 120 mm. Of the 184 fish examined, 87% had complete adipose fin removal, 11% had only a partial fin clip, and 2% had little or no discernable clip.

Anglers caught approximately 221 chinook during the three derbies in 1997 and harvested an estimated 161 chinook (Table 7). Because of poor catch rates in the first three derbies, the December derby was canceled. Based on the 1995 creel survey (Horner et al. 1997) derbies accounted for around a third of the total annual chinook catch. Using this estimate, anglers caught approximately 670 chinook in 1997 and harvested around 490.

The estimated number of hatchery and naturally-produced chinook entering the lake, and the theoretical estimates of abundance of each age-class until spawning are in Table 8. The number of hatchery and wild chinook in the fishery (age-1 to age-4) was tabulated for each year since 1990. The expected proportion of hatchery fish in the catch ranged from a low of 23% (1995) to 100% (all years prior to 1990; Table 9). Based on angler logs, fin-clipped chinook (hatchery fish) comprised over half of the catch until 1993. The dominance of naturally-produced chinook in recent years has been expected, although hatchery fish are comprising even less of the catch than expected (Figure 6).

Chinook Kokanee Relationship-As would be expected, there is evidence of an inverse relationship between the number of chinook stocked in Coeur d'Alene Lake and the estimates of kokanee age classes in following years (Figure 7). We used the abundance of age-2 for kokanee as the dependent variable plotted against 1) the number of age-0 chinook stocked and produced naturally two and three years earlier (Figure 8), and 2) the estimated total population of age-1 to age-4 chinook in the lake during the same year (Figure 9). Based on existing data, around ⅓ of the variability in kokanee numbers is determined by chinook abundance. The linear regression lines suggest that the optimal age-2 kokanee density (50 to 150 fish/ha) is associated with chinook stocking levels (including natural production) of 60,000 to 80,000 fish.

Incidental Juvenile Chinook Harvest Assessment-We checked a total of 65 anglers (30 boats) in four days of creel surveying. Anglers had creeled a total of 625 kokanee and no juvenile chinook. One juvenile chinook had reportedly been caught and released. Of 22 boats asked, at least one angler on 13 of the boats was aware of the possibility of incidental chinook catch and was confident in their ability to distinguish juvenile chinook from kokanee. Anglers on the remaining nine boats had not considered the possibility of catching juvenile chinook.

Smallmouth Bass Population Assessment-We collected 297 smallmouth bass in Wolf Lodge Bay, Blue Creek Bay, and Beauty Bay. Although we did not collect other species of fish for relative abundance information, smallmouth bass were the predominate species electrofished along most areas of the shoreline. The modal length increment was 180-189 mm with 37 fish (Figure 10). Proportional stock density (PSD; Anderson 1980; Willis et al. 1993) of stock (180 mm) and quality (280 mm) size fish was 29, and relative stock density of preferred sized fish (350 mm; RSD-P) was 12. We aged 100 scales and back-calculated ages from a subsample of 34 scales. Length-at-age analysis indicates that smallmouth bass growth was similar to mean growth rates from

Table 7. Summary of effort, harvest, and catch rates during the 1997 chinook salmon derbies, Coeur d'Alene Lake, Idaho.

Derby	Number of anglers interviewed	Estimated hours fished	Estimated number of chinook: Caught	Harvested	Released	Catch Rate (hrs/fish)
April	146	4,752	45	45	0	106
July	128	2,105	20	13	7	104
August	269	15,164	156	103	53	97
December	No derby held in December due to poor fishing					
Total	543	22,021	221	161	60	100

Table 8. Hypothesized number of age-0 to age-4 wild and hatchery chinook from each year-class since 1982 based on the following survival estimates: age-0 to age-1 = 10% , age-1 to age-2 = 50%, age-2 to age-3 = 25%, age-3 to age-4 = 5%.

Stocking Year	Origin	Previous Year Redds	Estimated Number at Age: Smolts	Age-1	Age-2	Age-3	Age-4
1982	hatchery		34400	3440	1720	430	22
	wild		no wild fish				
	total		34400	3440	1720	430	22
1983	hatchery		60100	6010	3005	751	38
	wild		0	0	0	0	0
	total		60100	6010	3005	751	38
1984	hatchery		10500	1050	525	131	7
	wild		0	0	0	0	0
	total		10500	1050	525	131	7
1985	hatchery		18500	1850	925	231	12
	wild		0	0	0	0	0
	total		18500	1850	925	231	12
1986	hatchery		29500	2950	1475	369	18
	wild		0	0	0	0	0
	total		29500	2950	1475	369	18
1987	hatchery		59400	5940	2970	743	37
	wild		0	0	0	0	0
	total		59400	5940	2970	743	37
1988	hatchery		44600	4460	2230	558	28
	wild		0	0	0	0	0
	total		44600	4460	2230	558	28
1989	hatchery		35400	3540	1770	443	22
	wild		0	0	0	0	0
	total		35400	3540	1770	443	22
1990	hatchery		35700	3570	1785	446	22
	wild	52	23400	2340	1170	293	15
	total		59100	5910	2955	739	37
1991	hatchery		41600	4160	2080	520	26
	wild	70	31500	3150	1575	394	20
	total		73100	7310	3655	914	46
1992	hatchery		10000	1000	500	125	6
	wild	14	6300	630	315	79	4
	total		16300	1630	815	204	10
1993	hatchery		0	0	0	0	0
	wild	63	28350	2835	1418	354	18
	total		28350	2835	1418	354	18
1994	hatchery		17269	1727	863	216	11
	wild	100	40000	4000	2000	500	25
	total		57269	5727	2863	716	36
1995	hatchery		30200	3020	1510	378	19
	wild	100	40000	4000	2000	500	25
	total		70200	7020	3510	878	44
1996	hatchery		39700	3970	1985	496	25
	wild	65	26000	2600	1300	325	16
1998	hatchery		55200	5520	2760	690	35

Table 8. Continued.

Stocking Year	Origin	Previous Year Redds	Estimated Number at Age: Smolts	Age-1	Age-2	Age-3	Age-4
	total		65700	6570	3285	821	41
1997	hatchery		12100	1210	605	151	8
	wild	84	33600	3360	1680	420	21
	total		45700	4570	2285	571	29
1998	hatchery		55200	5520	2760	690	35
	wild	37	14800	1480	740	185	9
	total		70000	7000	3500	875	44

Table 9. Hypothesized number of age-0 to age-4 wild and hatchery chinook in the fishery, Coeur d'Alene Lake, Idaho, on a given year, based on the following survival estimates: age-0 to age-1 = 10% , age-1 to age-2 = 50%, age-2 to age-3 = 25%, age-3 to age-4 = 5%.

	Age-1		Age-2		Age-3		Age-4		Age-1-4	
	total	*hatchery*	total	*hatchery*	total	*hatchery*	total	*hatchery*	**TOTAL**	*% hatchery*
1984	6,010		1,720						7,730	*100%*
1985	1,050		3,005		430				4,485	*100%*
1986	1,850		525		751		22		3,148	*100%*
1987	2,950		925		131		38		4,044	*100%*
1988	5,940		1,475		231		7		7,653	*100%*
1989	4,460		2,970		369		12		7,810	*100%*
1990	3,540		2,230		743		18		6,531	*100%*
1991	5,910	*3,570*	1,770	*1,770*	558	*558*	37	*37*	8,275	*72%*
1992	7,310	*4,160*	2,955	*1,785*	443	*443*	28	*28*	10,735	*60%*
1993	1,630	*1,000*	3,655	*2,080*	739	*446*	22	*22*	6,046	*59%*
1994	2,835	*0*	815	*500*	914	*520*	37	*22*	4,601	*23%*
1995	5,727	*1,727*	1,418	*0*	204	*125*	46	*26*	7,394	*25%*
1996	7,020	*3020*	2,863	*863*	354	*0*	10	*6*	10,248	*38%*
1997	6,570	*3,970*	3,510	*1,510*	716	*216*	18	*0*	10,814	*53%*
1998	4,570	*1,210*	3,285	*1,985*	878	*378*	36	*11*	8,768	*41%*
1999	7,000	*5,520*	2,285	*605*	821	*496*	44	*19*	10,150	*65%*
2000			3,500	*2,760*	571	*151*	41	*25*	4,112	*71%*

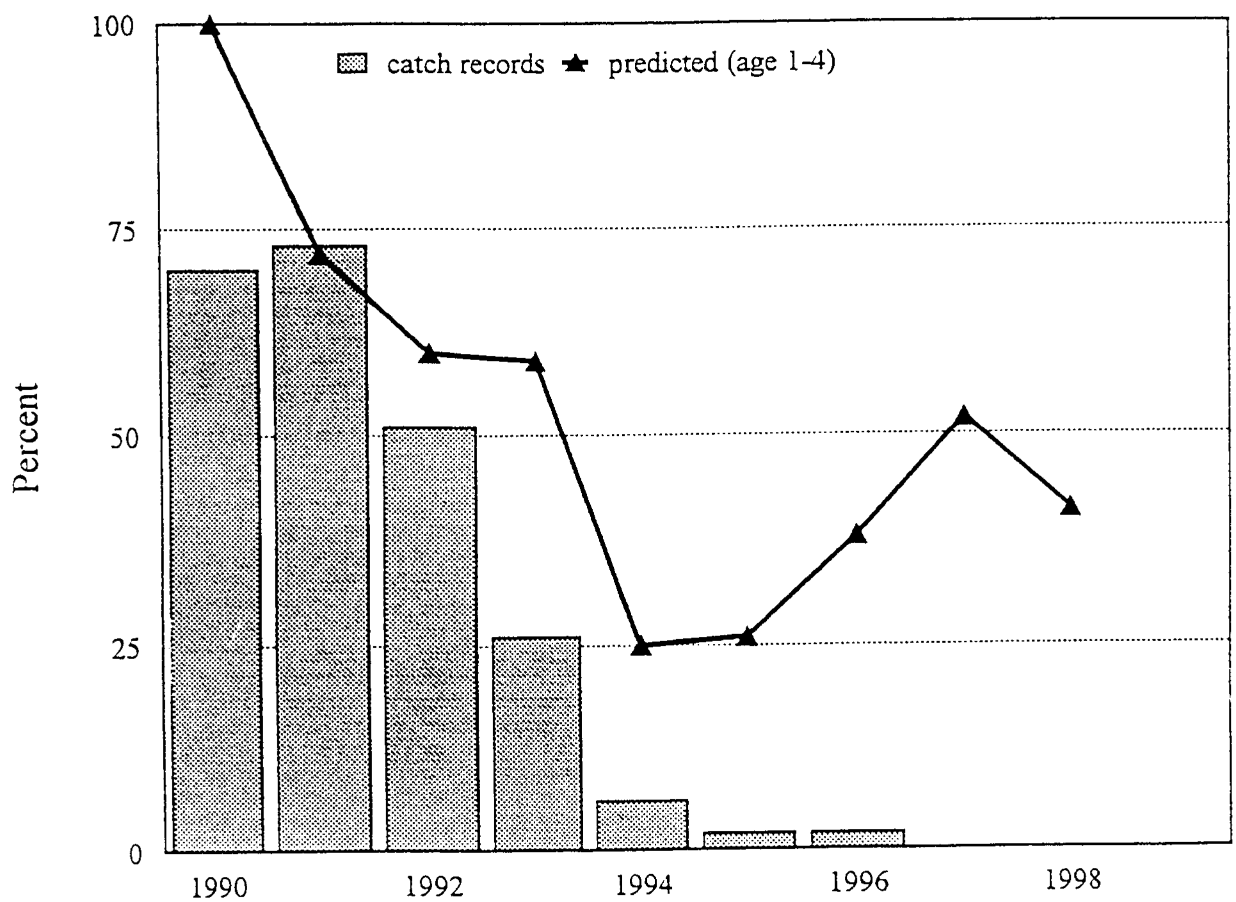


Figure 6. Predicted and actual percentage of wild and hatchery chinook caught in Coeur d'Alene Lake, Idaho, as recorded in angler diaries.

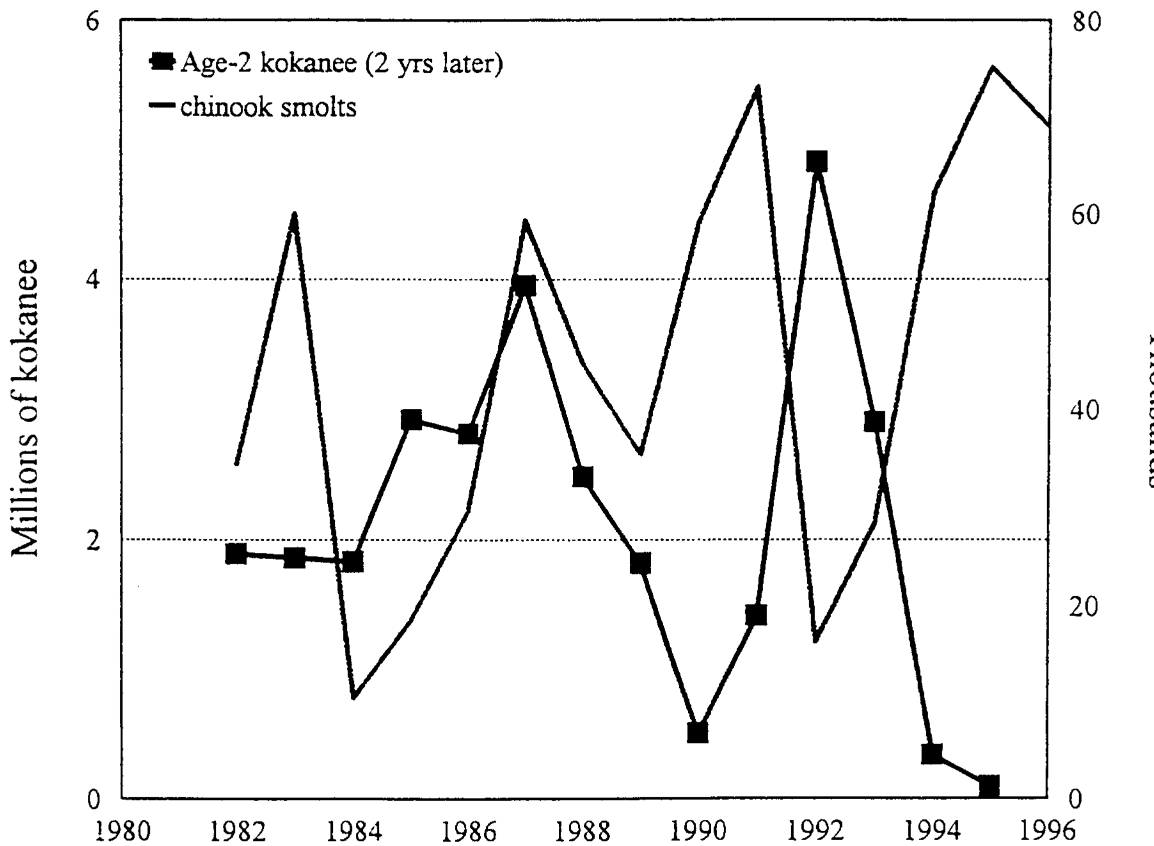


Figure 7. Estimated number of hatchery and naturally produced chinook smolts entering Coeur d'Alene Lake, Idaho, since 1982, and the abundance of age-2 kokanee two years later, as estimated by midwater trawling.

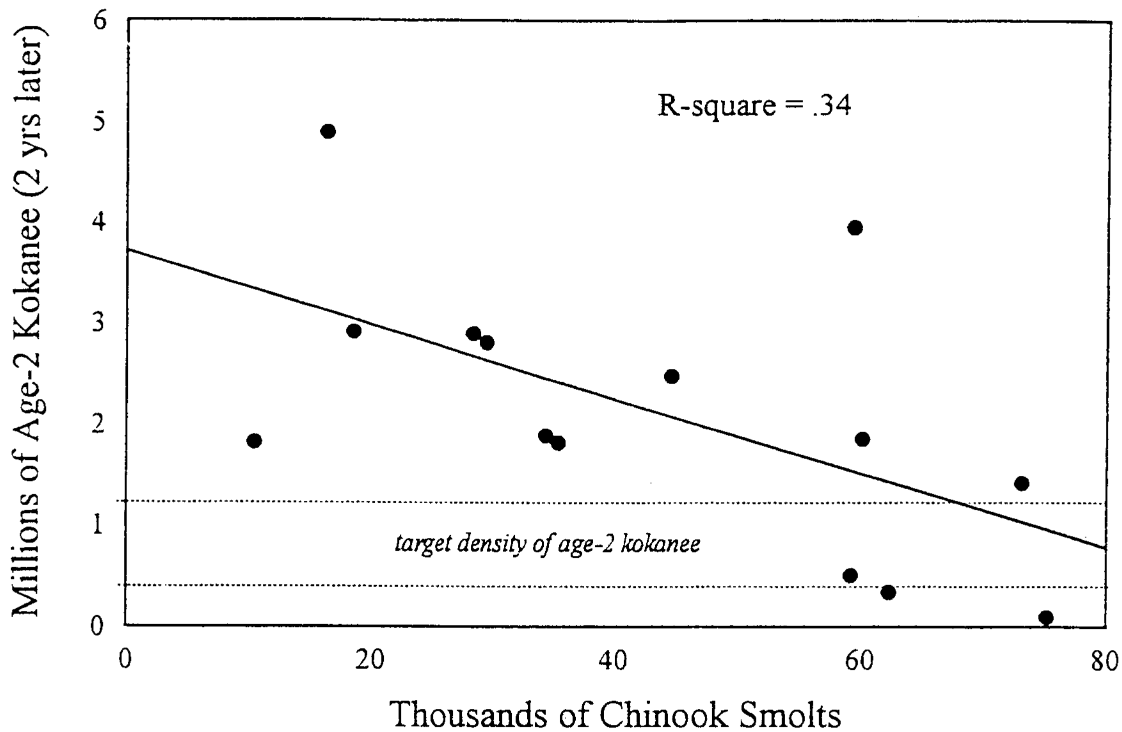


Figure 8. Linear regression model of the number of chinook smolts entering Coeur d'Alene Lake, Idaho, and the abundance of age-2 kokanee two years later.

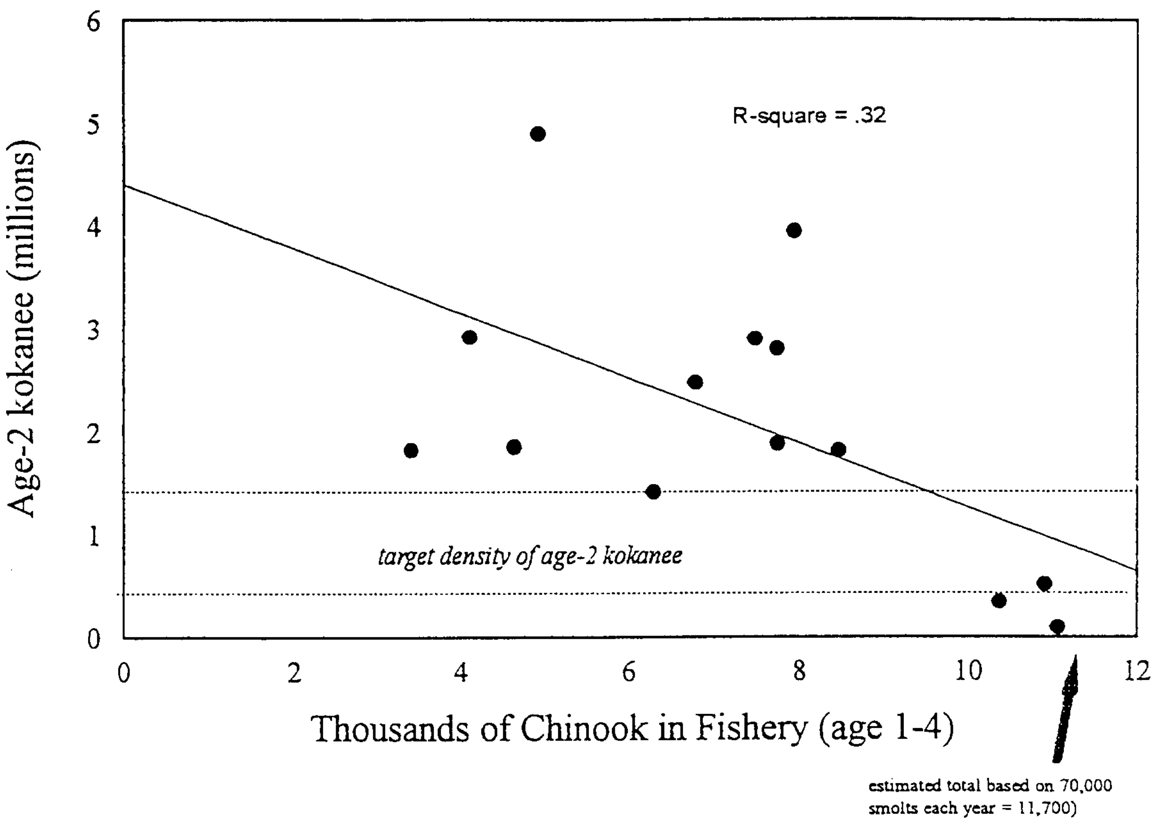


Figure 9. Linear regression model of the number of age 1-4 chinook in Coeur d'Alene Lake, Idaho, and the abundance of age-2 kokanee during the same year.

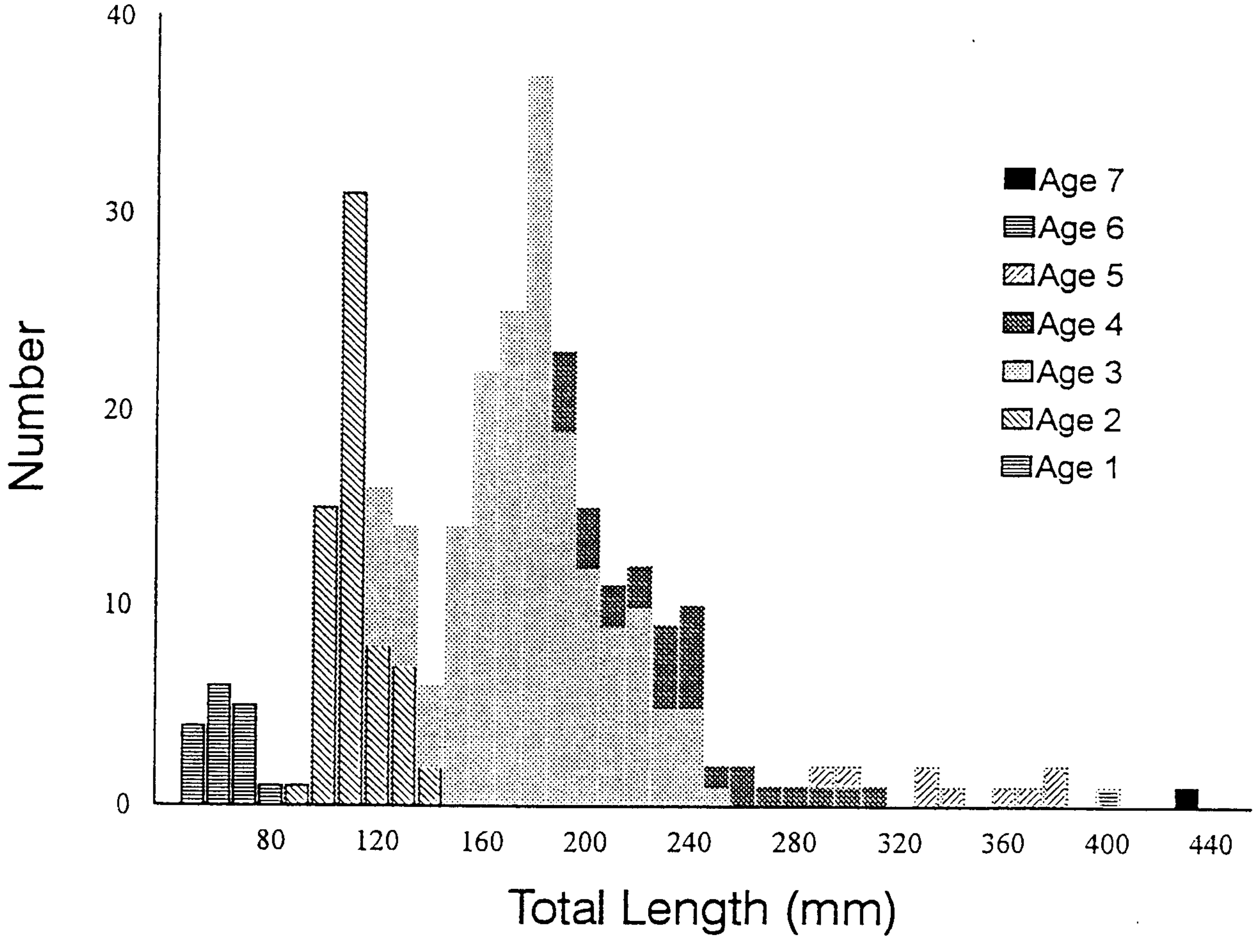


Figure 10. Length and age frequency of smallmouth bass collected from the Wolf Lodge Bay area of Coeur d'Alene Lake, Idaho in 1997.

northern latitudes (Carlander 1977), with fish generally achieving the legally harvestable size (305 mm) at five years of age. Growth was typical when compared with the statewide mean for smallmouth bass (Dillon 1996; Table 10). We collected few scales from fish older than age-5; however, the largest fish collected was 434 mm and estimated to be seven years old.

The largest smallmouth bass collected weighed 1.4 kg, a W_r of 109. Comparison of the length-weight relationship with the standard weight equation developed for smallmouth bass (Carlander 1977) indicates relative weight of smallmouth bass in Coeur d'Alene Lake is about average (Figure 11).

Spirit Lake

We estimated a total kokanee population in Spirit Lake of 391,632 fish, a density of 683 fish/ha (Table 11). Abundance of age-3 kokanee was estimated at 6,458 fish, or 11 fish/ha. This is the lowest age-3 kokanee estimate since trawling began in 1981 and confirms reports from anglers that kokanee fishing was poor throughout the summer. Age-2 kokanee were estimated at 65,600, or 115 fish/ha, age-1 kokanee were estimated at 132,200 or 231 fish/ha, and age-0 kokanee were estimated at 187,300, or 328 fish/ha. We estimated the total biomass of kokanee in Spirit Lake at 21.5 kg/ha.

Age-3 kokanee ranged from 240 to 269 mm at the time of trawling. Age-2 kokanee were bimodally distributed in length and ranged from 155 to 230 mm, overlapping with age-1 kokanee, which ranged from 110 to 179 mm (Figure 12).

Upper Priest Lake

Netting-We netted a total of 121 lake trout (including recaptures) during the four sampling efforts. Lake trout ranged in size from 193 to 980 mm (TL; Figure 13). Total netting effort was 289 gill net hours for a mean catch rate of 0.42 lake trout/hr (per individual net). The June and July sampling efforts demonstrated the experimental monofilament nets were the most effective gear type for lake trout. The mean catch rate for the 2.5 cm monofilament nets was 0.13 fish/hr in June and 0.20 fish/hr in July, and the mean catch rate for the experimental multifilament nets was 0.42 fish/hr in June and 0.27 fish/hr in July. Catch rates for the experimental monofilament nets were relatively consistent throughout all four sampling periods, ranging from 0.55 to 0.63 fish/hr. The experimental monofilament nets were consistently more effective than the other net types (Table 12), and we used them exclusively in the August and October sampling efforts.

Lake trout were captured in several locations around the lake (Figure 14) in depths ranging from around 8 to 30 m (because most nets were set on slopes, depth refers to median net depth). Most lake trout were captured in depths greater than 10 m (Table 13). Of the 121 lake trout gill netted, 90 were tagged, nine were sampling mortalities, 19 were too small to tag, and three were recaptures.

We set gill nets in October in areas that seemed to be possible lake trout spawning sites, based on depth and sonic telemetry. During this effort, we caught 18 lake trout. Only two of these exhibited obvious signs of spawning (a male with milt and a spawned out female). In addition, catch rates during the October effort did not indicate a high density of lake trout in the areas we netted.

Table 10. Mean back-calculated lengths at annulus formation of smallmouth bass collected in Coeur d'Alene Lake, Idaho, in June, 1997, and in other comparable waters.

	Length at annulus formation						
Location	I	II	III	IV	V	VI	VII
Coeur d'Alene Lake	75	131	197	238	315	350	
Hayden Lake	76	127	180	244	292	323	399
Idaho mean	79	147	206	257	300	333	384
N. American mean	97	176	246	298	341	382	397

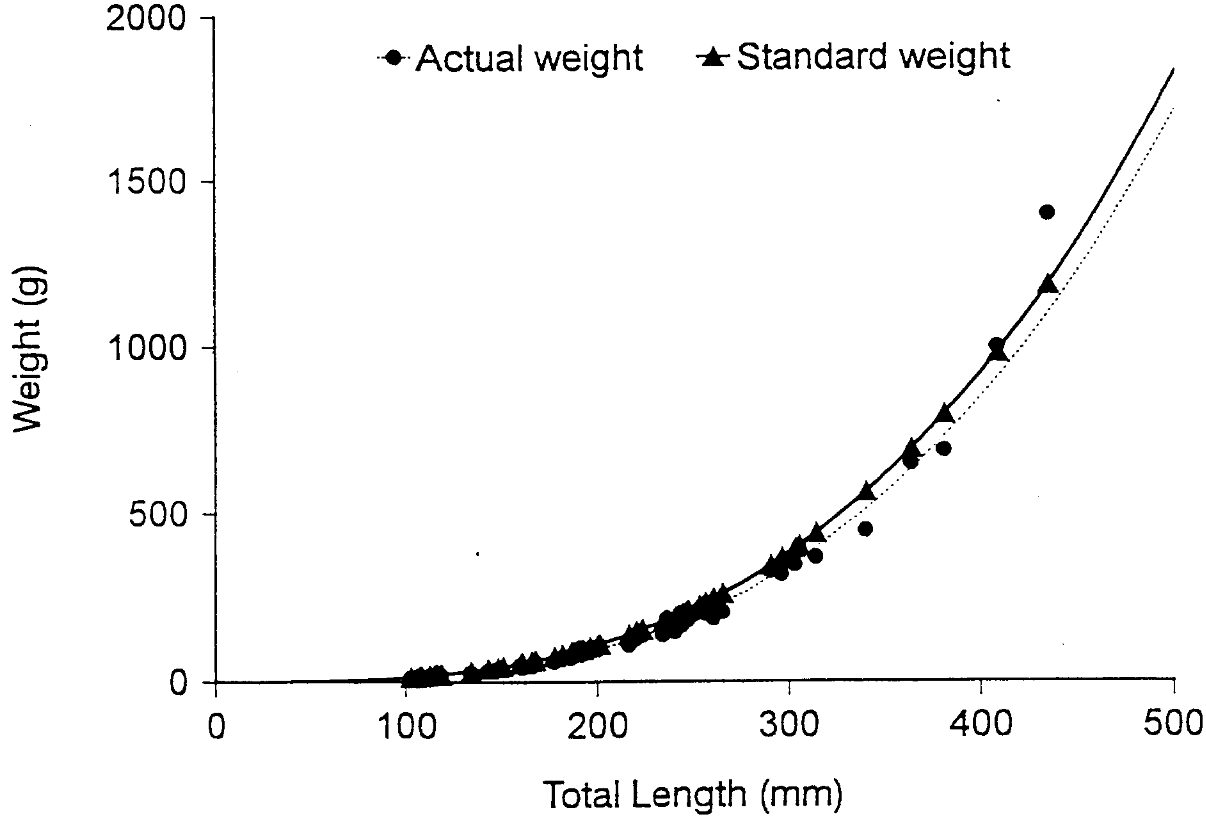


Figure 11. Actual weight and standard weight equations of smallmouth bass collected from Coeur d'Alene Lake, Idaho, in June 1997.

Table 11. Kokanee population estimates based on midwater trawling from 1981 through 1997 in Spirit Lake, Idaho.

Year	Age-Class					
	Age-0	Age-1	Age-2	Age-3	Total	Age 3+/ha
1997	187,300	132,200	65,600	6,500	391,600	11
1996	--	--	--	--	--	--
1995	39,800	129,400	30,500	81,400	281,100	142
1994	11,800	76,300	81,700	19,600	189,400	34
1993	52,400	244,100	114,400	11,500	422,400	20
1992	--	--	--	--	--	--
1991	458,400	215,600	90,000	26,000	790,000	45
1990	110,000	285,800	84,100	62,000	541,800	108
1989	111,900	116,400	196,000	86,000	510,400	150
1988	63,800	207,700	78,500	148,800	498,800	260
1987	42,800	164,800	332,800	71,700	612,100	125
1986	15,400	138,000	116,800	35,400	305,600	62
1985	149,600	184,900	101,000	66,600	502,100	116
1984	3,300	16,400	148,800	96,500	264,900	168
1983	111,200	224,000	111,200	39,200	485,700	68
1982	526,000	209,000	57,700	48,000	840,700	84
1981	281,300	73,400	82,100	92,600	529,400	162

Fry releases:
1994 - 383,550
1988 - 75,000
1987 - 60,800
1986 - 57,142
1985 - 109,931
1984 - 100,000

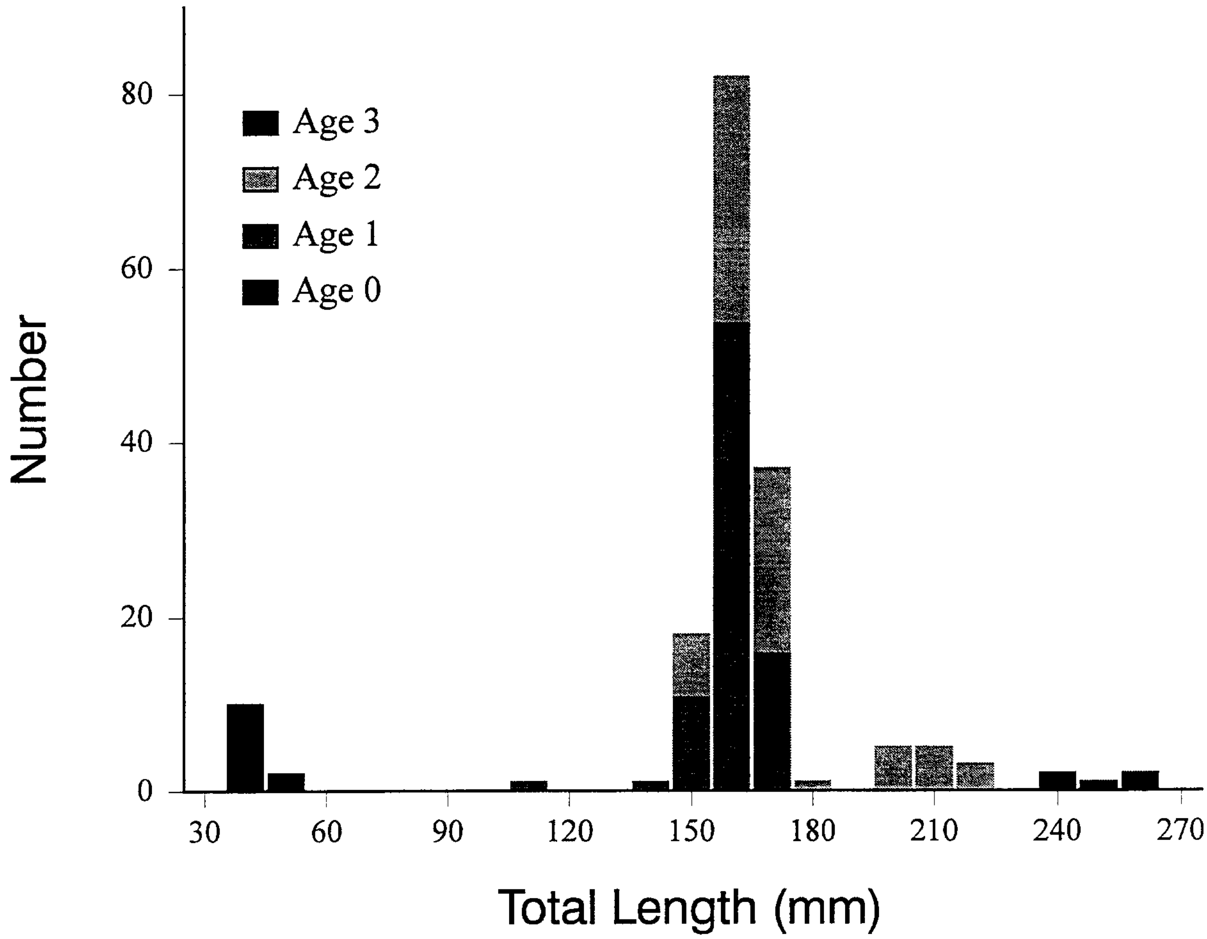


Figure 12. Length frequency and age distribution of kokanee collected by midwater trawling in Spirit Lake, Idaho in August, 1997.

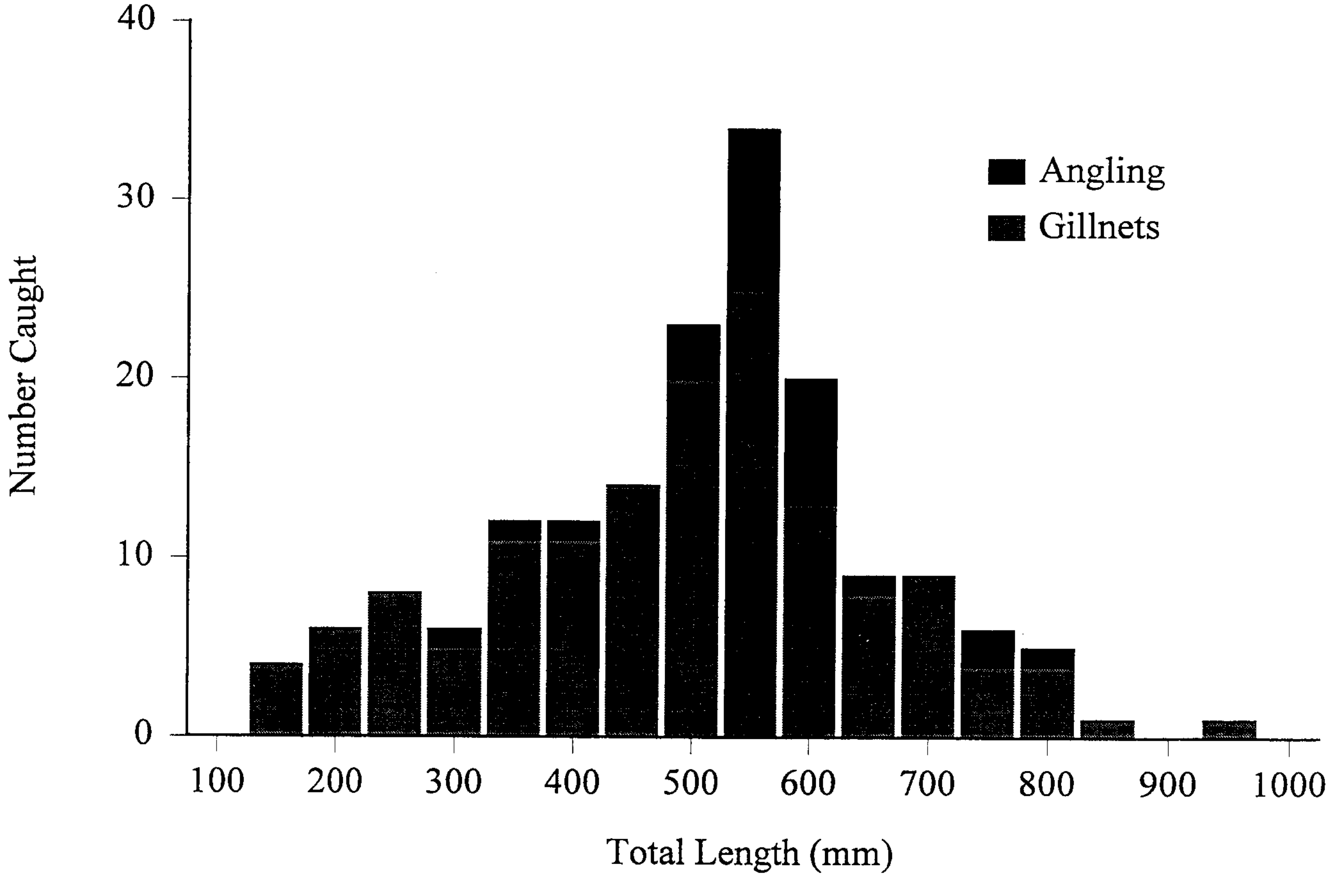


Figure 13. Length frequency distribution of lake trout collected by gillnetting and angling from Upper Priest Lake, Idaho, from June through October, 1997.

Table 12. Hours of effort, total catch of lake trout and bull trout, and mean catch rate of fish/hr/net (CPUE) for sampling gears used on Upper Priest Lake, Idaho, from June through October, 1997.

			Lake Trout		Bull Trout	
Sampling	Net Type	Hrs. Fished	Catch	CPUE	Catch	CPUE
June 2-4	Exp. Mono	21.87	12	0.55	2	0.09
	Exp. Multi	33.47	14	0.42	2	0.06
	2.5 cm Mono	53.97	7	0.13	1	0.02
	Hoop Nets[a]	144	0	0.00	2	0.01
July 14-16	Exp. Mono	47.58	30	0.63	1	0.02
	Exp. Multi	37.17	10	0.27	4	0.11
	2.5 cm Mono	19.58	4	0.20	0	0
August 14-15	Exp. Mono	45.65	26	0.57	1	0.02
October 15	Exp. Mono	30.10	18	0.60	1	0.03
TOTAL		289.38	121		12	

[a]Not included in totals

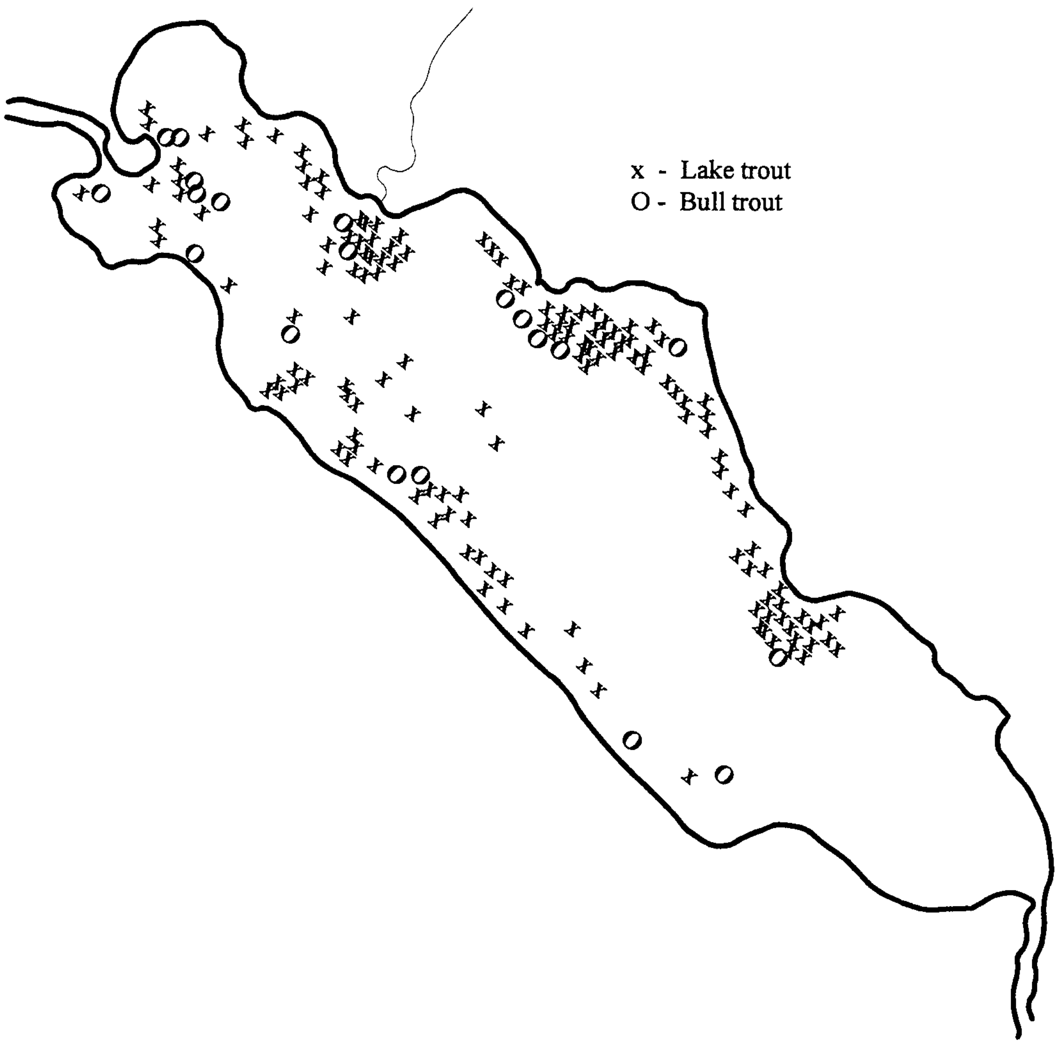


Figure 14. Capture locations of lake trout and bull trout in Upper Priest Lake, Idaho, collected by gillnetting and angling in 1997.

Table 13. Cumulative gill net effort and catch of lake trout and bull trout in the three different depth zones (median net depth) in Upper Priest Lake, Idaho, from June through October 1997.

			Lake Trout		Bull Trout	
Depth (m)	Hrs.	% of effort	Catch	CPUE	Catch	CPUE
< 10	48.5	17	12	0.25	4	0.12
10-20	161.7	56	67	0.37	4	0.02
> 20	79.2	27	42	0.53	4	0.05

Bull trout were also collected in several locations around the lake (Figure 14) and in all three depth zones, with no single zone exhibiting significantly higher catch than the others (Table 13; Chi-square test, alpha = 0.05). Bull trout catch rates were much lower than for lake trout and were highly variable due to the low number of fish collected. Two bull trout were collected in a single hoopnet, baited with kokanee and power bait. Of the 14 bull trout captured with gill nets and hoopnets, we spaghetti-tagged 10, and released the remaining four untagged. During the October gillnetting effort, we captured one post-spawn male bull trout, indicating a portion of the adult bull trout had returned to the lake. We had no bull trout mortalities.

There was a clear overlap in distributions of the two species based on gill net catch (Figure 15). Of the 12 gill net sets that captured bull trout, three of the sets also contained lake trout (in the same net). The remaining bull trout were all netted at sites and depths where lake trout were captured, although not in the same sets.

Angling-A total of 11 anglers (in six boats) participated in the two-day effort (August 14-15) and logged a total of 100 rod hours. A total of 25 lake trout and 6 bull trout were caught, for catch rates of 4 and 16.7 h/fish, respectively, or a combined catch rate of 3.2 h/fish. Depth of catch overlapped between the two species (Figure 16) with lake trout and bull trout both being caught at depths ranging from 17 to 31 m. Bull trout and lake trout were caught using the same equipment and methods. With the exception of one bull trout, which was caught by vertical jigging, all fish were caught by trolling with downriggers.

Anglers tagged eighteen of the lake trout and none of the bull trout collected during the intensive effort. Two of the 25 lake trout and one of the six bull trout were recaptures from previous gillnetting efforts. Although none of the fish were hooked in the gills and barbless hooks were used, one lake trout was a hooking mortality and two others were questionable releases. The thermal gradient during the August sampling period likely contributed to this relatively high hooking mortality.

Anglers collected an additional 42 lake trout and nine bull trout during the extensive angling efforts from May to November. An additional six lake trout were tagged during the extensive angling efforts (four in July by IDFG, two in November by Brockus's).

Combined Mark and Recapture-The total number of lake trout collected by gillnetting and angling was 152. This included five recaptured fish (Table 14). In addition to the five fish recaptured in Upper Priest Lake, one lake trout was recaptured in Priest Lake by an IDFG employee fishing recreationally in August. This recaptured fish combined with sonic telemetry results (later in this section) was evidence of emigration from Upper Priest Lake through the Thorofare. The fish had been tagged on June 3, when the Thorofare was characterized by unusually high water and cool water temperatures. The apparent movement from the upper lake to the lower lake precludes a closed population estimate; therefore, we used Bailey's Multiple Recapture method (Ricker 1975) to estimate the lake trout population. The total lake trout population immediately prior to the October sampling effort was 646 fish. For comparison, we also conducted a Peterson's Mark-Recapture method (Ricker 1975) and estimated a population of 701 fish. Because we only tagged fish 320 mm (TL) and larger, the population estimate does not include any fish <320 mm.

The total number of bull trout collected by gillnetting and angling was 20 (Table 15). Bull trout ranged in size from 190 to 730 mm. As with lake trout, on average, bull trout caught by angling were larger than those gill netted (Figure 17). We collected few juvenile bull trout, and comparison with gill net data from 1956 indicates a much smaller proportion of juvenile bull trout in the population than in the previous survey

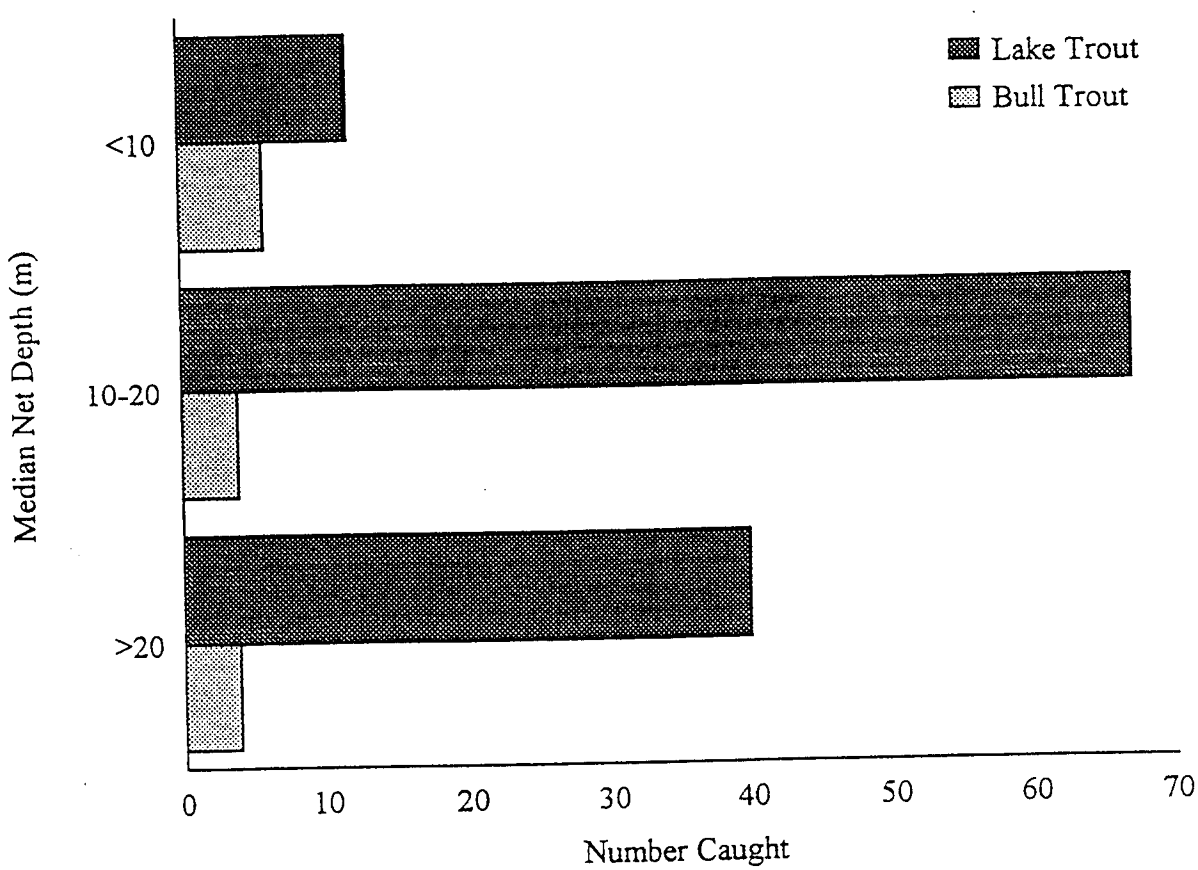


Figure 15. Median depth of gill net sets that caught lake trout and bull trout from June through October 1997, in Upper Priest Lake, Idaho.

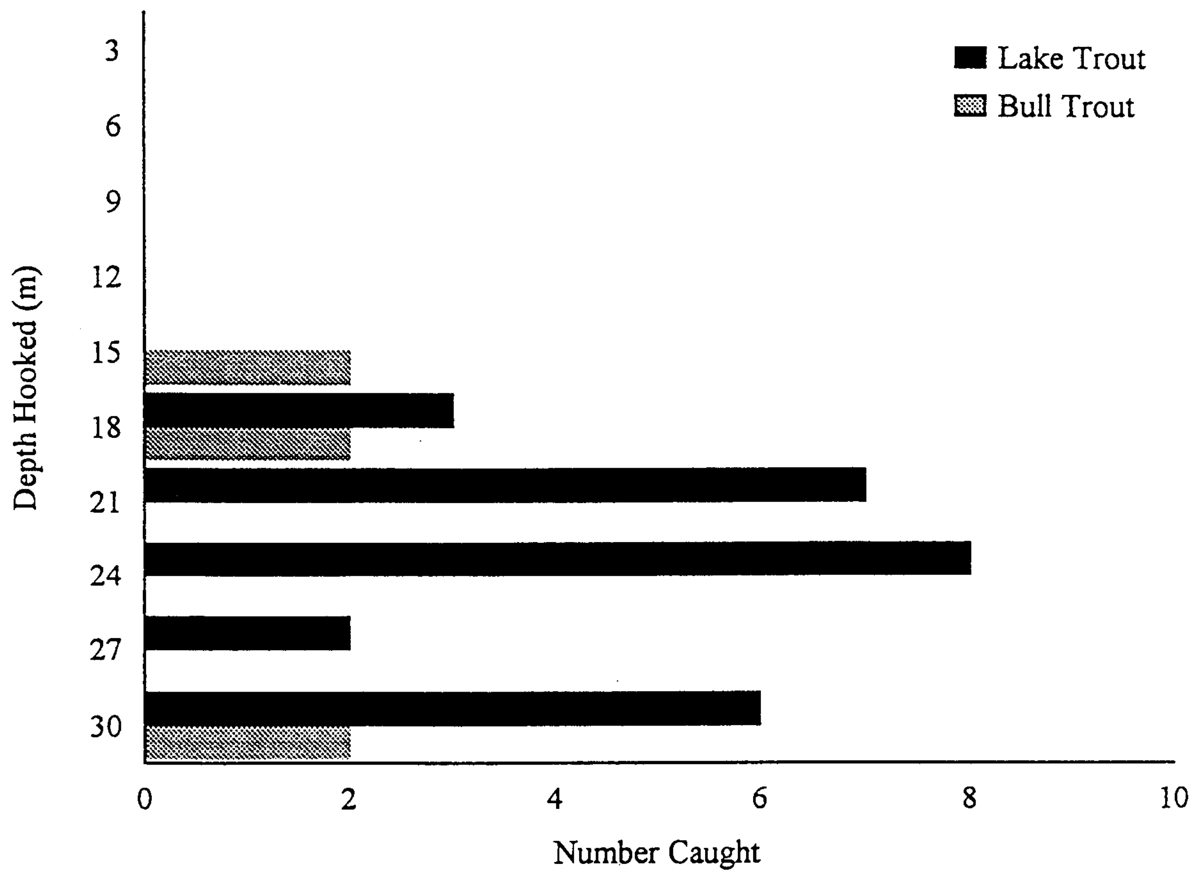


Figure 16. Depth where lake trout and bull trout were caught during the intensive fishing effort in Upper Priest Lake, Idaho on August 14 and 15, 1997.

Table 14. Total number of lake trout captured, spaghetti tagged, and recaptured throughout the 1997 sampling effort in Upper Priest Lake, Idaho. "Mortalities" were lake trout >320 mm that were unintentionally killed during collection and (in parentheses) lake trout < 320 mm that were intentionally sacrificed for stomach content and otoliths because they were too small to tag.

Sampling Period	Total Captures	New Captures	Number Tagged	Re-Captures	Mortalities	Total Tags Out
June	33	33	23	--	2 (8)	23
July	48	48	38	0	0 (9)	61
August	51	49	38	2	6[a] (0)	99
October	18	15	13	3	3[b] (0)	110
November	2	2	2	0	0 (0)	112
TOTALS	152	147	114	5	11 (17)	112

[a] 1 tagged fish found dead
[b] 1 tagged fish killed during collection

Table 15. Total number of bull trout captured, spaghetti tagged, recaptured, and killed throughout the 1997 sampling effort in Upper Priest Lake, Idaho.

Sampling Period	Total Captures	New Captures	Number Tagged	Re-Captures	Mortalities	Total Tags Out
June	7	7	6	--	0	6
July	5	5	3	0	0	9
August	7	6	1	1	0	10
October	1	1	0	0	0	10
TOTALS	20	19	10	1	0	10

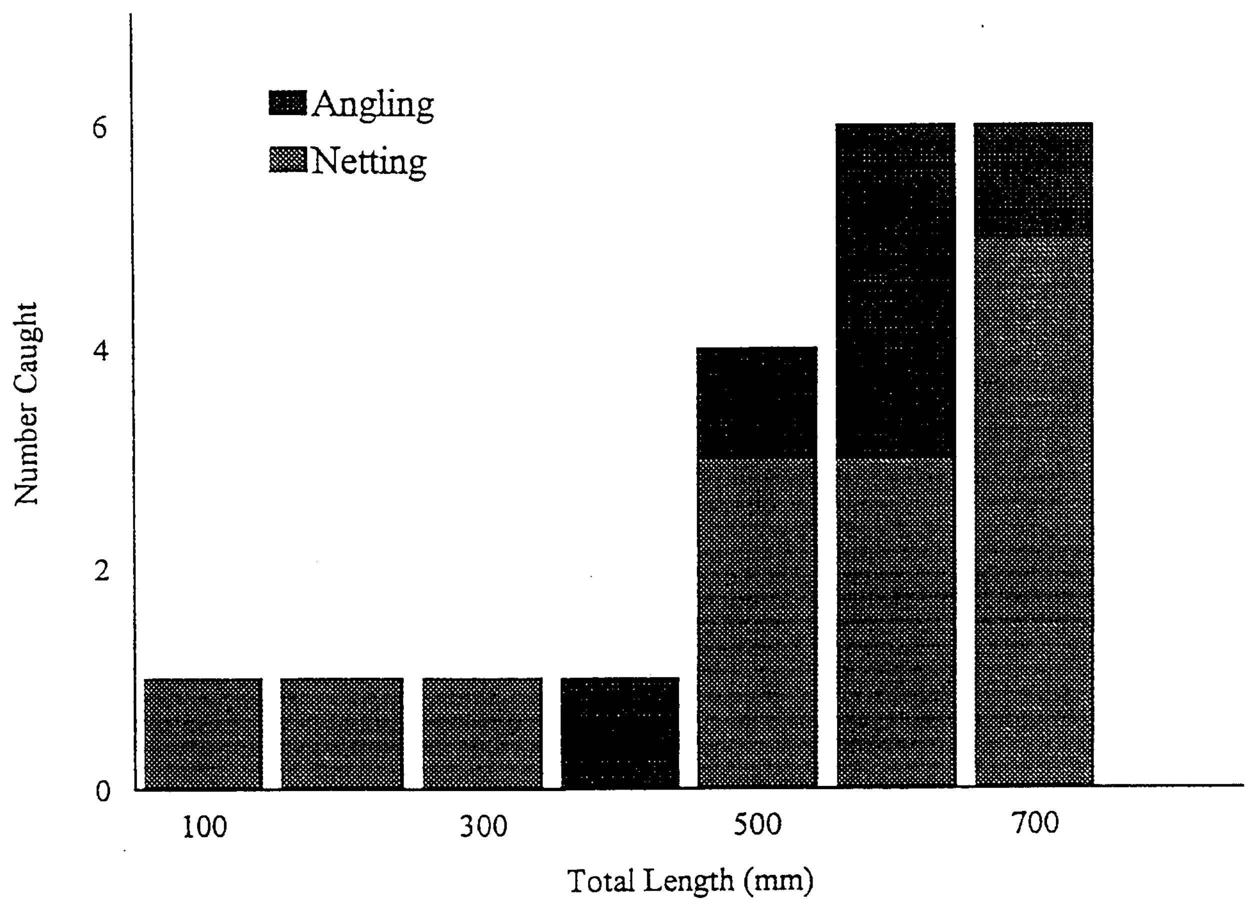


Figure 17. Length frequency distribution of bull trout collected by gillnetting and angling from Upper Priest Lake, Idaho, from June through October 1997.

(Figure 18). Based on the Peterson mark-recapture estimate, the population of 320 mm and larger bull trout was 72. This estimate is of limited use, however, because we recaptured only one marked fish.

The ratio of lake trout to bull trout varied between gillnetting and angling. From June through October, we captured 121 lake trout and 12 bull trout for a ratio of 10:1. The two-day fishing effort in August resulted in a catch of 25 lake trout and six bull trout for a ratio of 4.2:1. Although this doesn't represent a significant difference in the ratios (Chi-square test, $p>0.1$), the inclusion of the catch from the extensive angling effort (42 additional lake trout and nine bull trout) does indicate that bull trout are caught at a significantly ($p<0.05$) higher rate by angling (4.5:1) than by gillnetting (10:1).

Because a portion of the bull trout are spawning in tributaries in the fall and are absent from the lake, we also estimated the ratio excluding the October netting effort (Table 16). The timing of the bull trout spawning migration from Upper Priest Lake is not well documented, however, and may begin in early to mid-summer (Bjornn 1957). This suggests the actual relative abundance of bull trout in the lake wouldn't have changed from August to October. This possibility, combined with the return of post-spawned bull trout to the lake and their possible attraction to lake trout spawning areas justify the inclusion of the October gillnetting data in the overall lake trout:bull trout ratio.

Sonic Tagging-Nine of the 10 sonic tags implanted into lake trout transmitted signals that we were able to locate. The tenth tag was likely malfunctioning when implanted. Of the remaining nine tagged fish, we had no apparent mortalities following surgery. Seven of the tagged fish have remained in Upper Priest Lake and have moved throughout the lake since being tagged in mid-August. Most of these fish exhibited no strong affinity to a particular area, but seem to travel widely throughout the lake (Figure 19). The remaining two disappeared from the upper lake sometime between September 9 and September 25. One of these fish was located in Priest Lake on October 2, nearly 16 km from where it had last been located in the upper lake, and by November 26, the same fish had returned to Upper Priest Lake (Figure 20). Because of the size of Priest Lake, telemetry is logistically very difficult and time consuming. We have only attempted to survey the entire lake one day; therefore, the remaining missing fish could very possibly be in the lower lake despite our inability to locate the signal.

We saw no strong evidence of movement to, and congregation around, a particular spawning site of sonic-tagged fish. During the week of October 2, we did locate three fish near the northeastern bluff in close proximity to each other, and two other fish near the southeastern bluff in close proximity to each other (Figure 21). Prior to, and since that time, the fish seem to be scattered around the lake.

Priest Lake

A total of seven Floy-tagged lake trout were reported in 1997. Of these seven fish, five were tagged in September and October of 1995 by the volunteer angler (R. Phelps). Lake trout were recaptured an average of 3 km from the site of original capture. Growth ranged from 0 to 6 cm per year, with an average annual growth of 1.8 cm/year (Table 17).

Five of the seven fish (71%) recaptured in 1997 had been punctured in the swim bladder to relieve excess pressure and facilitate a return to the bottom. Of the 359 fish tagged from 1995 through 1997, swim bladders of 104 (29%) were deflated before releasing the fish. Cumulative tag return information (including

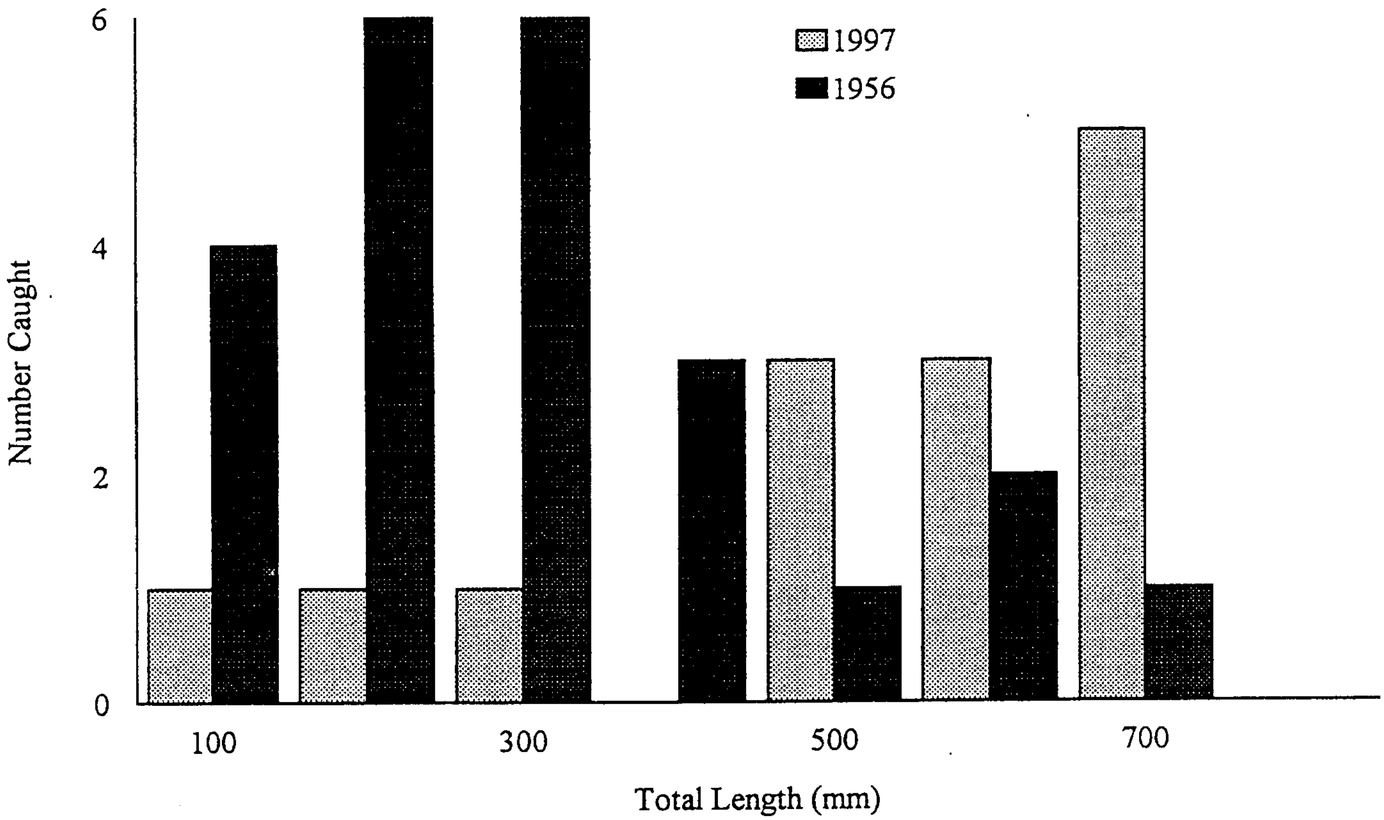


Figure 18. A comparison of the length frequency distribution of bull trout collected by gillnetting in Upper Priest Lake, Idaho, in 1956 and 1997.

Table 16. Ratios of lake trout to bull trout in Upper Priest Lake, Idaho, based on gillnetting and angling from June through October 1997.

Sampling Method	Number of fish caught: Lake trout	Number of fish caught: Bull trout	LT:BT Ratio
Gillnetting			
June through August only	103	11	9.3:1
Including October netting effort	121	12	10:1
Angling			
2-day effort in August only	25	6	4.2:1
Extensive angling effort	42	9	4.6:1
Total angling effort	67	15	4.5:1

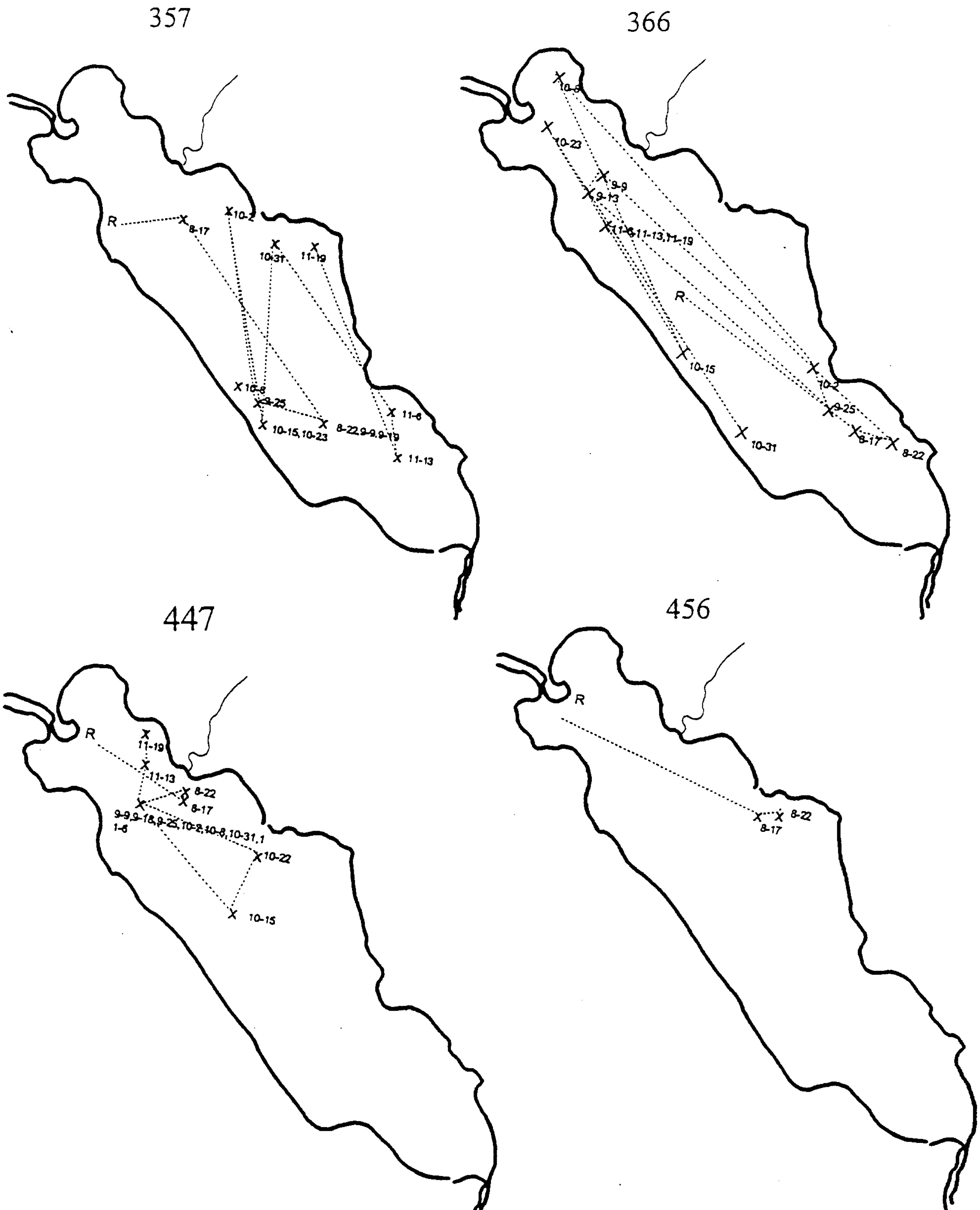


Figure 19. Weekly locations of individual sonic-tagged lake trout from August through November 1997, in Upper Priest Lake, Idaho.

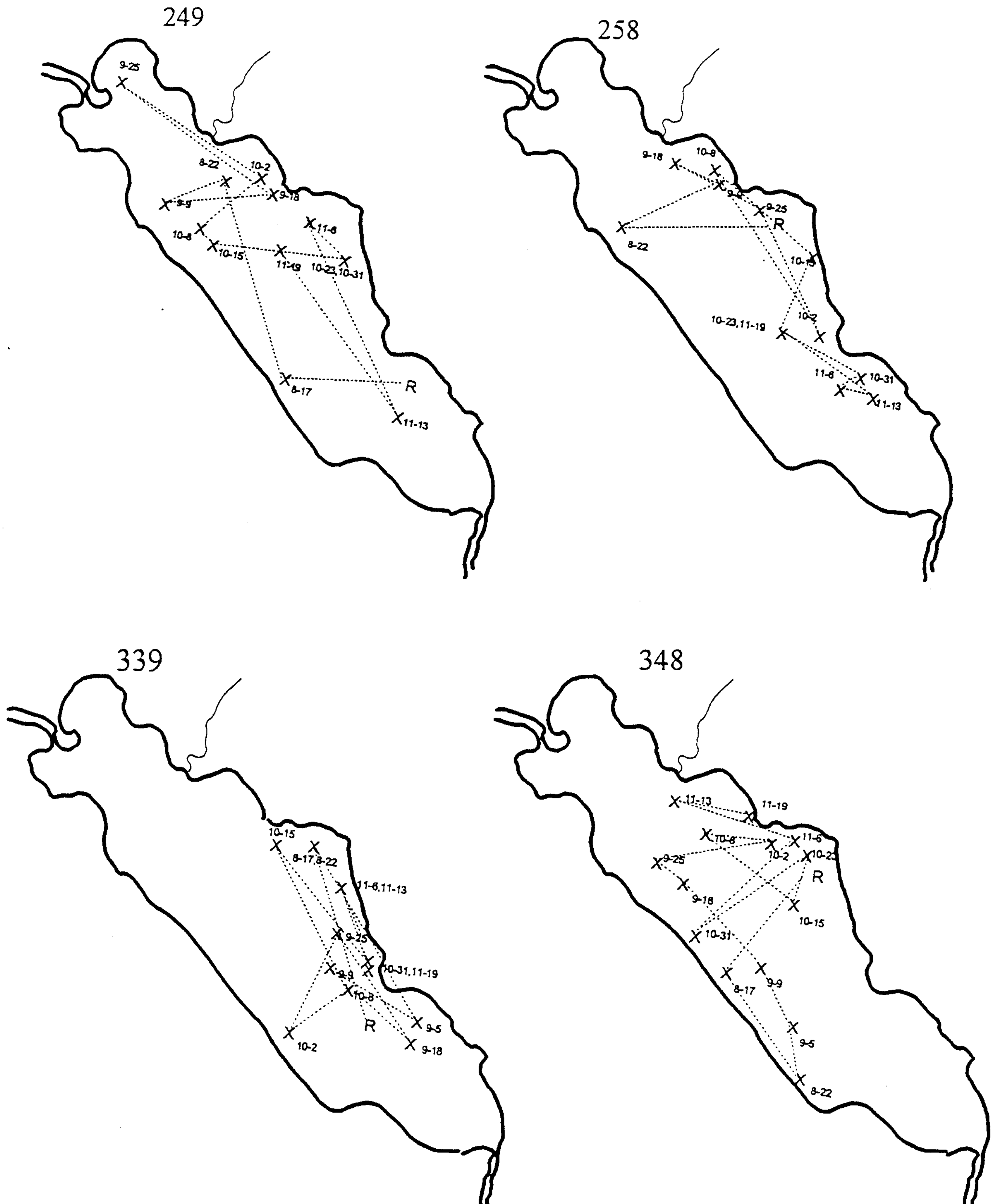


Figure 19 (Cont.). Weekly locations of individual sonic tagged lake trout from August through November 1997, in Upper Priest Lake, Idaho

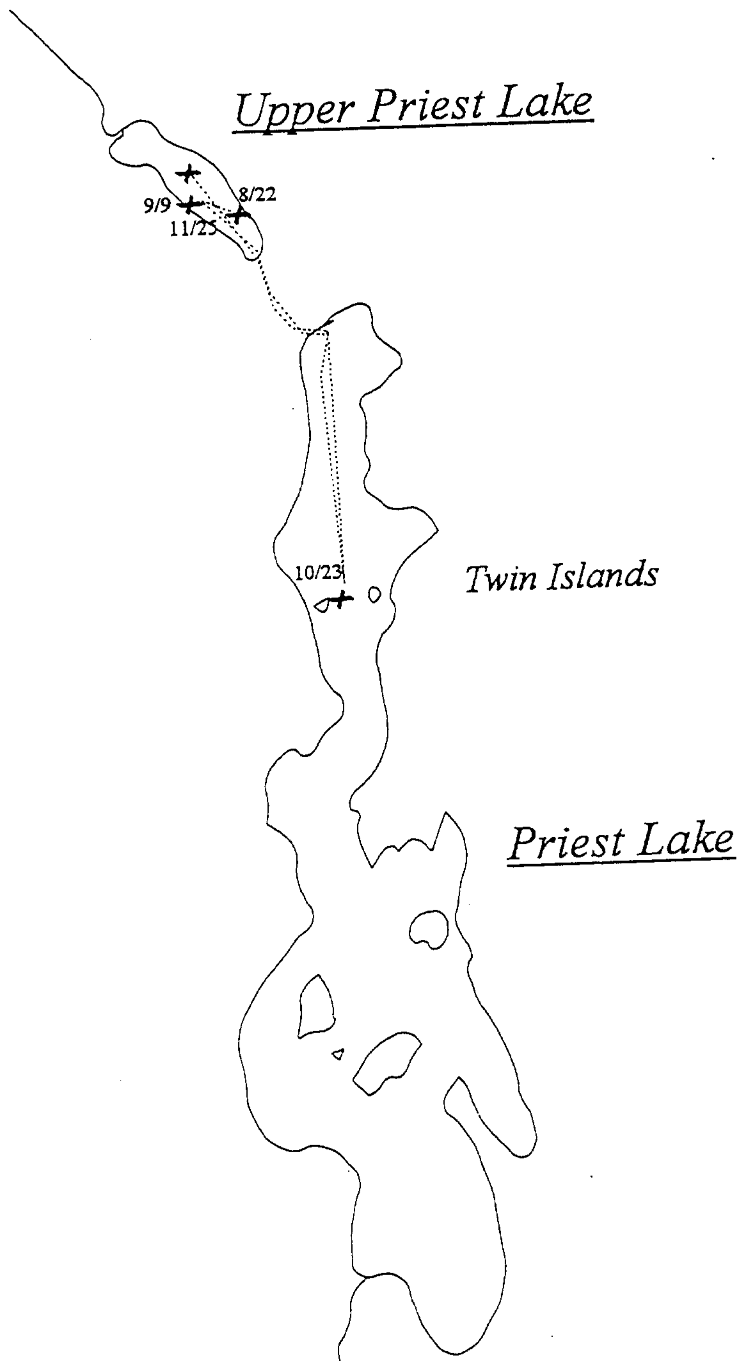


Figure 20. Weekly locations of a sonic-tagged lake trout which traveled from Upper Priest Lake to Lower Priest Lake, and then returned to Upper Priest Lake, Idaho, between August and November 1997.

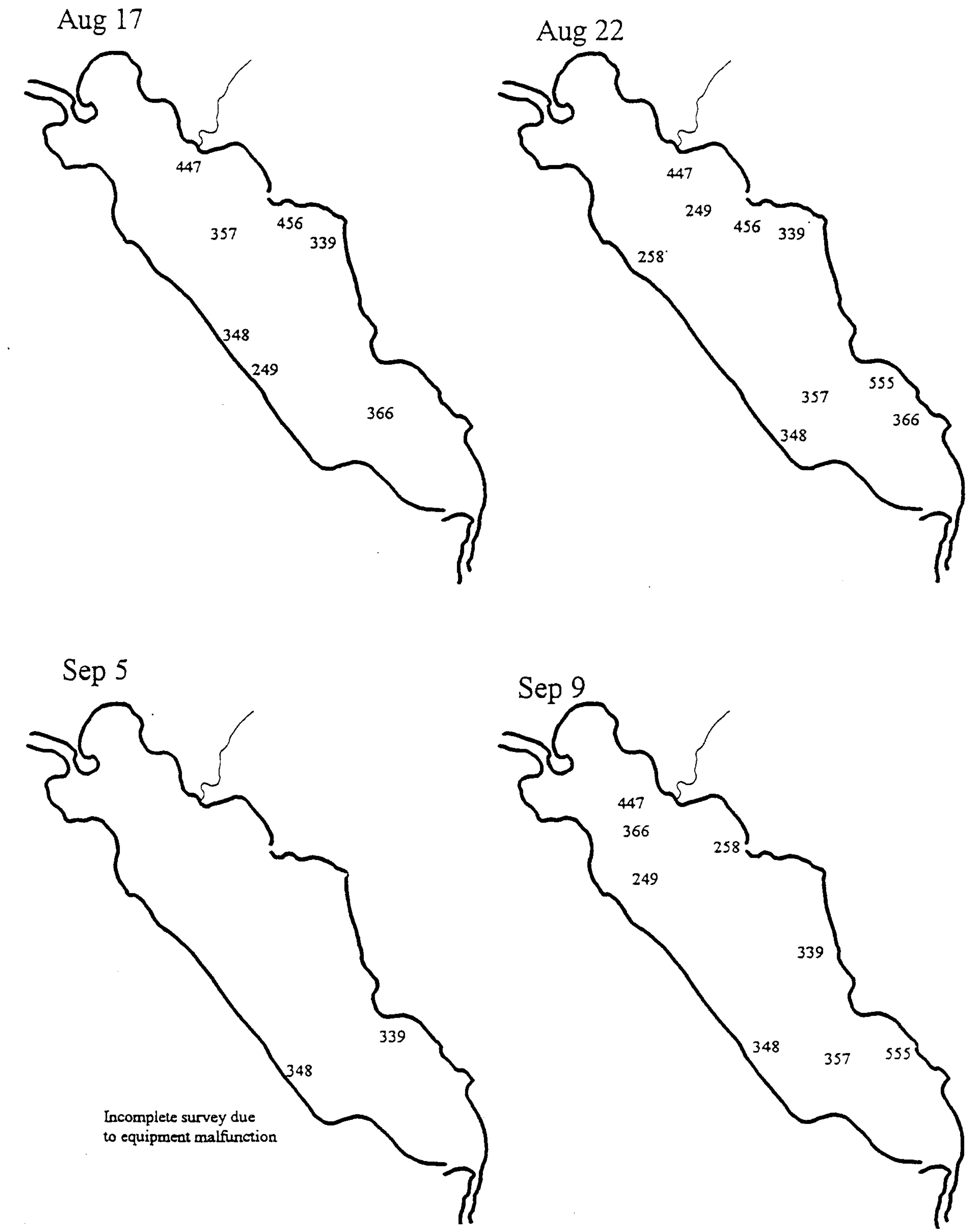


Figure 21. Weekly cumulative locations of tagged lake trout in Upper Priest Lake, Idaho, from August through November 1997.

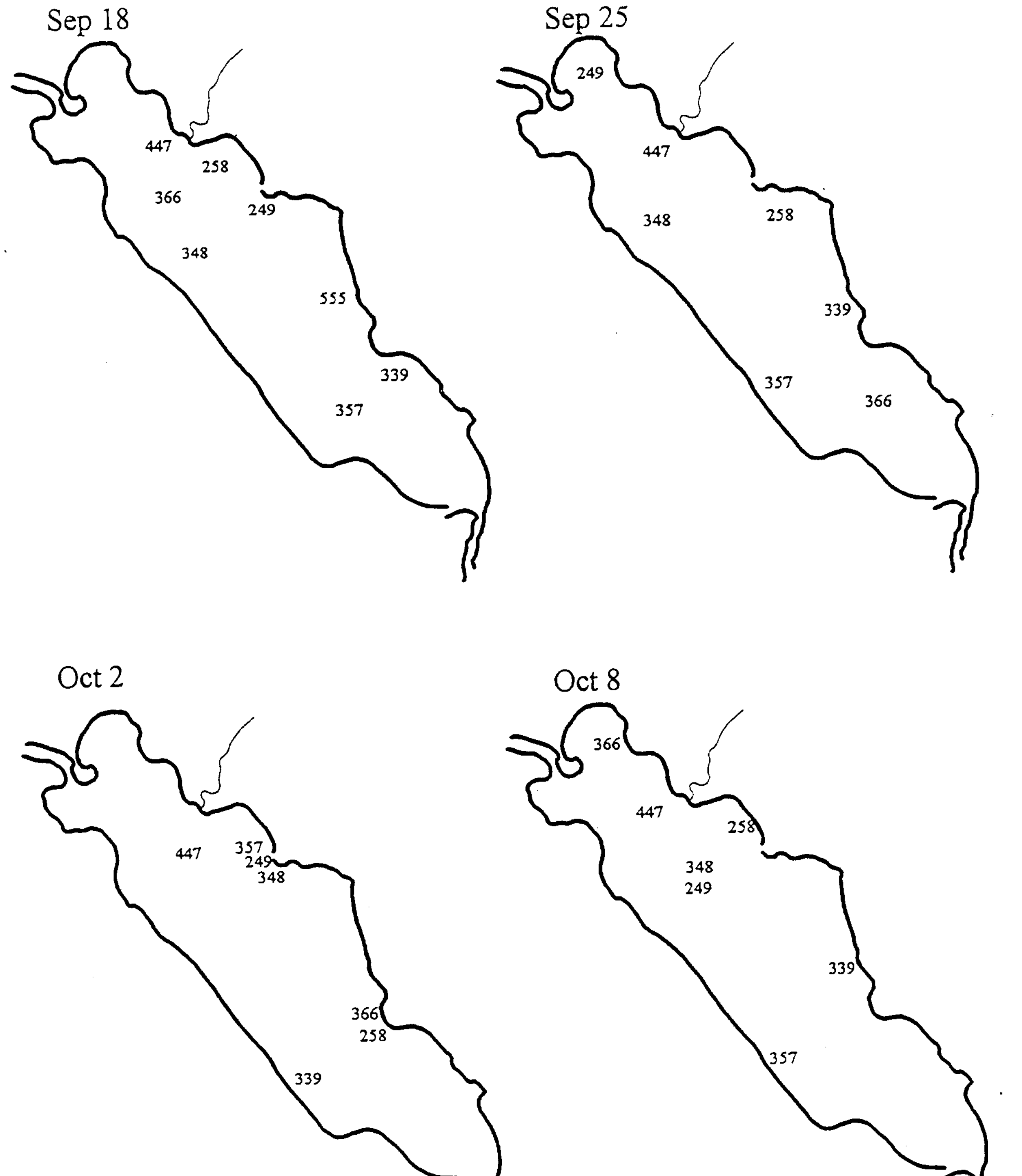


Figure 21. (Cont.) Weekly cumulative locations of tagged lake trout in Upper Priest Lake, Idaho, from August through November 1997.

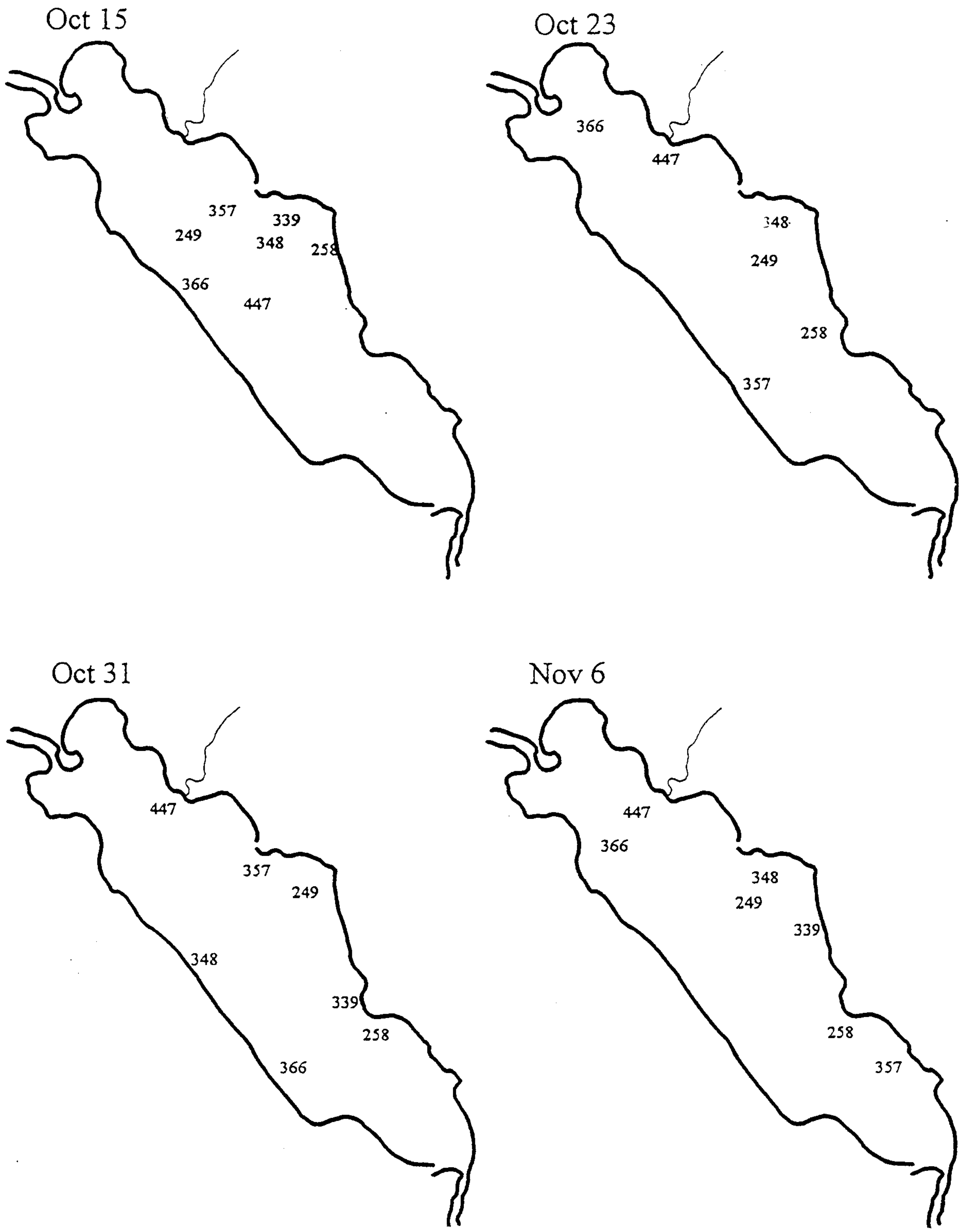


Figure 21 (Cont.). Weekly cumulative locations of tagged lake trout in Upper Priest Lake, Idaho, from August through November 1997.

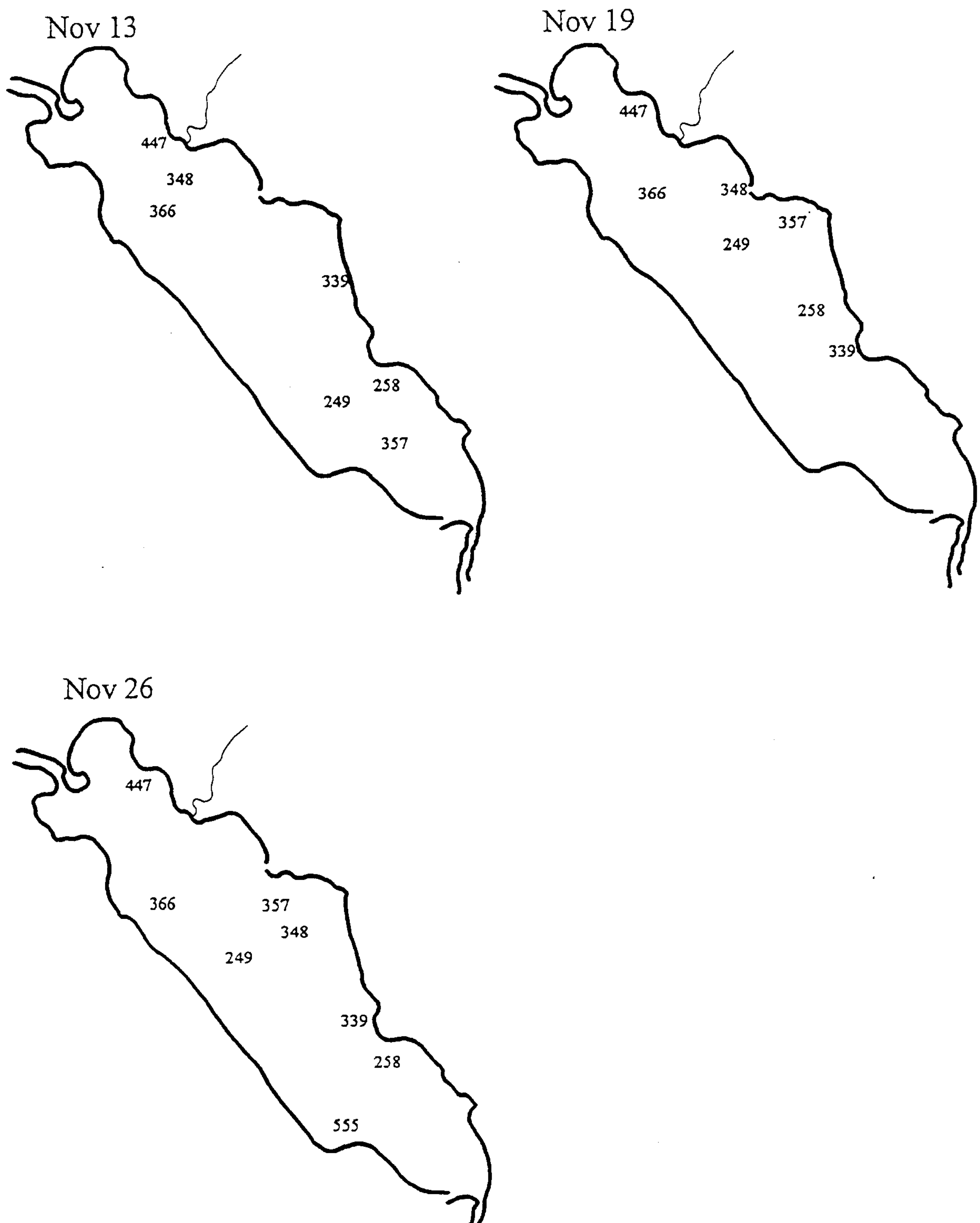


Figure 21 (Cont.). Weekly cumulative locations of tagged lake trout in Upper Priest Lake, Idaho, from August through November 1997.

Table 17. Lake trout tag returns, growth, and original release site, Priest Lake, Idaho, 1997.

Tag #	Mark			Recapture			Growth (mm)		Distance (km)	gas bladder deflation
	Date	Length	Location	Date	Length	Location	Total	Annual		
R1-144	10/6/95	393	NE Bartoo	2/1/97	406	Cav. Bay	13	10	3.5	✓
R1-01304	10/24/95	393	SE Bartoo	2/2/97	464	Cav. Bay	71	57	5	
R1-097	9/23/95	400	NE Bartoo	5/10/97	406	8 Mi. Island	6	4	4	✓
R1-271	6/21/97	406	SE Bartoo	8/27/97	406	Luby Bay	0	0	2.5	✓
R1-189	10/15/95	445	SE Bartoo	6/24/97	406	Bartoo Is.	<39>	0	0	✓
R1-281	7/5/97	483	NE Bartoo	10/26/97	470	Cav. Bay	<13>	0	3.5	✓
R1-049	9/16/95	476	SE Bartoo	11/2/97	560	?	84	75	?	

1997 data) indicates a significantly higher return rate of the punctured fish ($\chi^2 = 11.4$, df = 1, $P < 0.1$), suggesting greater survival than untreated fish. It is important to note, however, that gas bladder deflation of fish for this analysis was not randomly decided. The decision on whether or not to treat fish was based on a judgement of whether or not the fish would benefit by gas bladder deflation.

Standard Lowland Lake Surveys

Brush Lake

Lake Characteristics and Management-Brush Lake is an 11.8 ha natural lake located in northeastern Boundary County, and surrounded by National Forest land (Figure 22). The shoreline is forested, relatively steep, and rocky. The U.S. Forest Service maintains an overnight camping facility and a boat ramp. Under IDFG fishing regulations Brush Lake is managed as an "Electric Motors Only" lake.

Brush Lake was renovated in 1950 to eliminate abundant populations of peamouth *Mylocheilus caurinus* and suckers *Catostomus spp.* The lake is currently stocked with catchable rainbow trout *O. mykiss* annually and, when available, low densities of kokanee fry. Largemouth bass provided the only warmwater fishery in Brush Lake until 1989, when 238 mature bluegill were introduced. Currently, general regulations apply to all species in Brush Lake.

Limnological Characteristics-Brush Lake has a maximum depth of 7 m and a mean depth of 3.8 m. Based on a mid-summer dissolved oxygen (D.O.) profile, the hypolimnion was anoxic, indicating a eutrophic system (Figure 23). Water temperature in the upper 2 m was 21°-23.3°C. Because of the warm epilimnetic temperature and the anoxic hypolimnion, the total volume of trout habitat was estimated to be 61,700 m^3, or 13.6% of the total lake volume.

Fishery Characteristics-The catch per unit of combined gear sampling effort during the 1997 standard lake survey was 327 fish with an estimated total weight of 32.93 kg. Species composition included bluegill, largemouth bass, and rainbow trout. There were no non-game fish in the sample.

Bluegill were the most abundant species collected, comprising 65% and 38.5% of the total catch by number and total weight, respectively (Figure 24). Nearly all bluegill were collected by electrofishing, and fish were found in the littoral areas throughout the entire lake. Bluegill ranged in size from 80 to 219 mm (TL), with a modal-size category of 120 to 129 mm (Figure 25). There was not an abundance of large bluegill in the sample. The proportional stock density (PSD) was 19 and the relative stock density of preferred size bluegill (200 mm; RSD-P) was 2. We found mature age-2+ (just beginning their third summer of growth) males and females, but we also found immature males and females of the same age, indicating a variable age at maturity. Many bluegill collected in late July had not yet spawned, or were repeat spawning. The smallest mature bluegill were 139 mm. Growth was comparable to average growth throughout similar latitudes of North America (Carlander 1977). Bluegill generally achieved 200 mm at 5-7 years of age. Relative weight was above average, ranging from 103 to 112. Inasmuch as growth did not seem to be unusually slow for

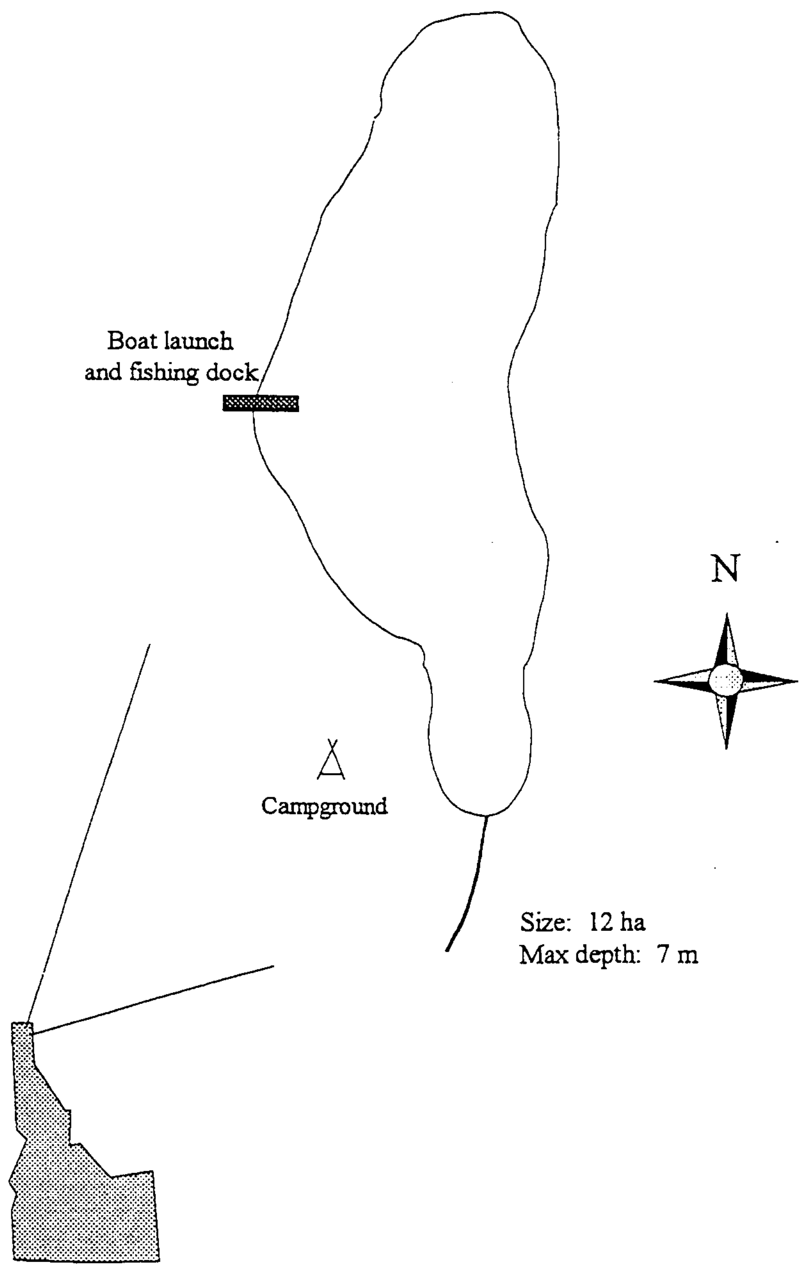


Figure 22. Location of Brush Lake, Boundary County, Idaho.

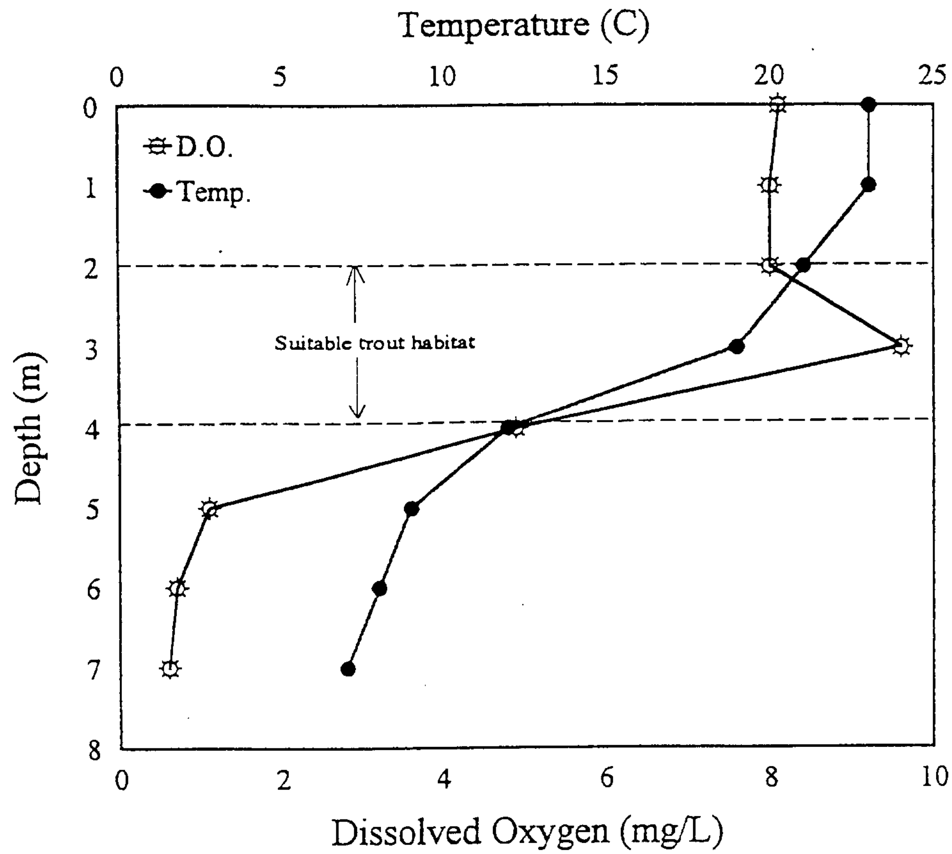
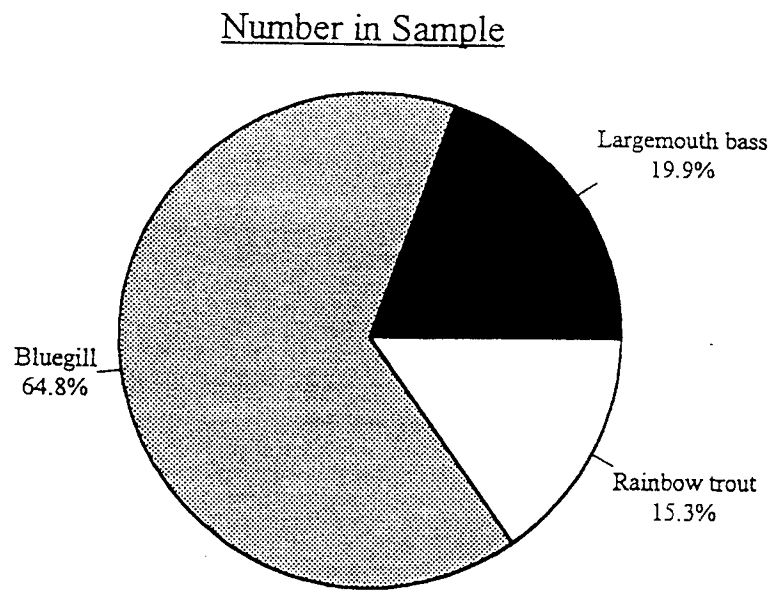


Figure 23. Temperature and dissolved oxygen (DO) profile of Brush Lake, Idaho, on July 31, 1997. Suitable trout habitat was defined as DO greater than 5 ppm and temperature less than 21°C.



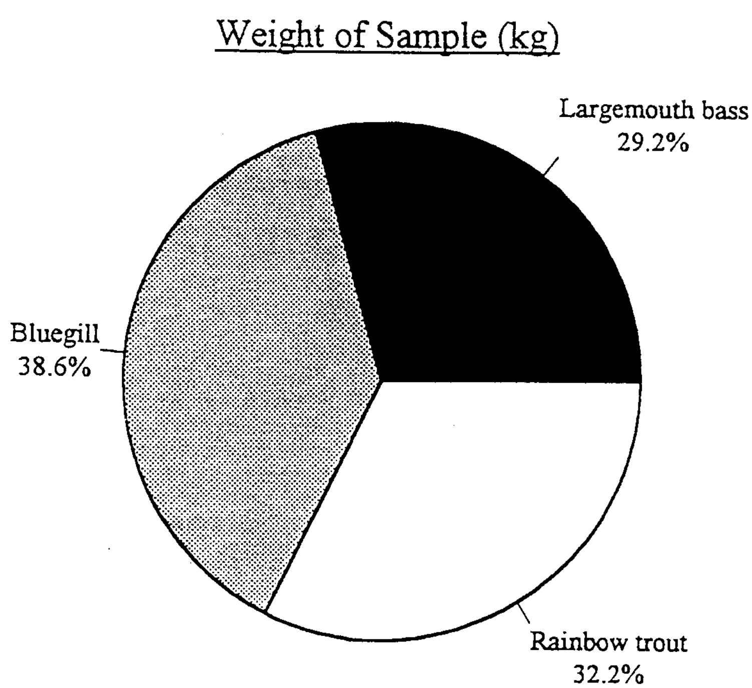


Figure 24. Relative species composition, by total weight and number, of fish collected during the standard lowland lake survey of Brush Lake, Idaho, 1997.

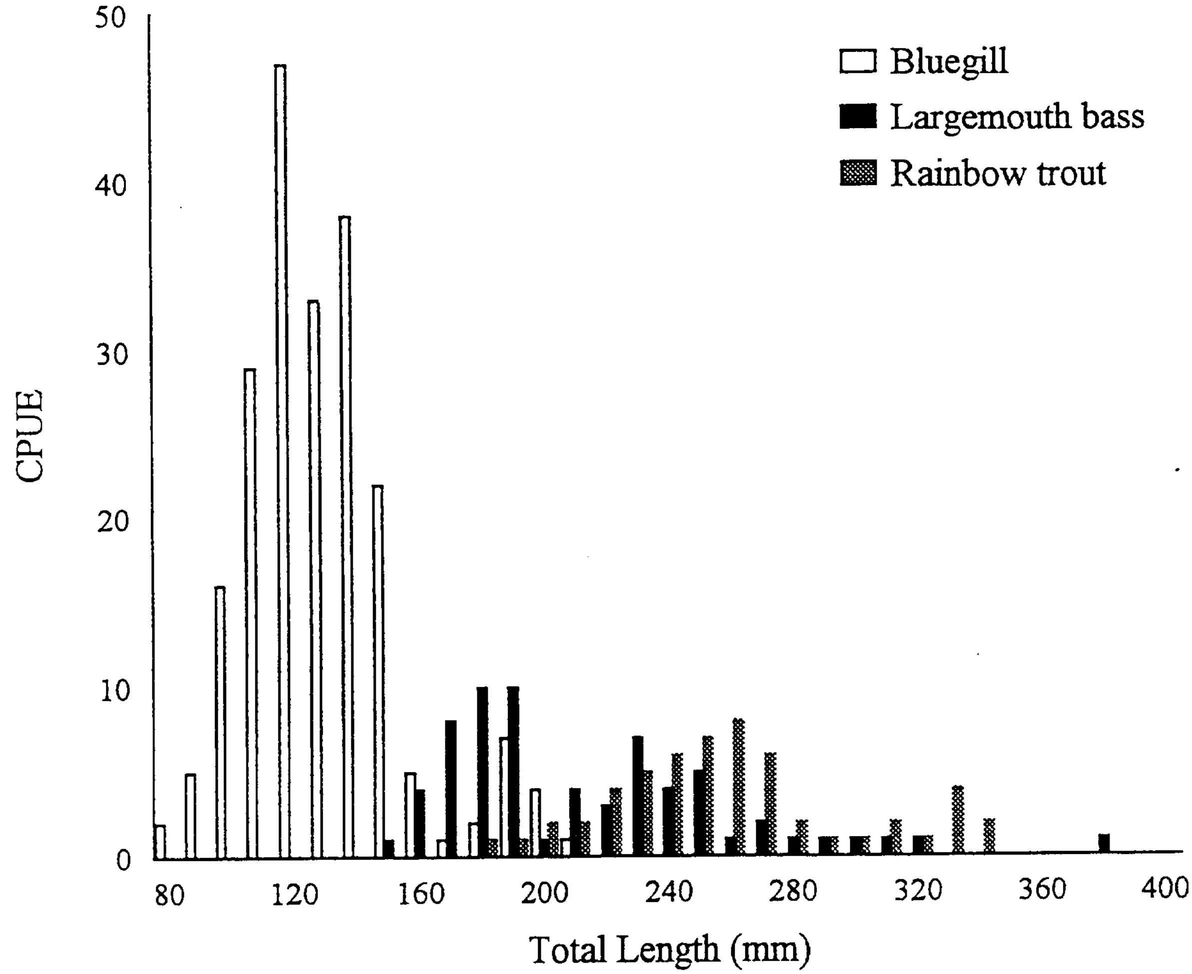


Figure 25. Length frequency of fish collected during the standard lowland lake survey of Brush Lake, Idaho, 1997.

bluegills in Brush Lake, the size structure is likely the result of a young population of fish. Bluegill have only been in Brush Lake for eight years and the size structure will likely improve as the population ages.

Largemouth bass comprised 20% of the sample and were the second-most abundant species by number (Figure 24). As with bluegill, largemouth bass were collected almost entirely by electrofishing and were found in littoral areas throughout the entire lake. Largemouth bass ranged in length from 150 to 359 mm, with a modal-size category of 190 to 199 mm (Figure 25). Proportional stock density was 9, indicating a low percentage of quality size (300 mm) fish. Based on scale analysis and back-calculation, largemouth bass growth was slow relative to other Idaho lakes (Dillon 1992), with fish generally not achieving 300 mm until age-7. Relative weight ranged from 87 to 106 and declined steadily with increasing length. Based on PSD and W_r, largemouth bass did not seem to benefit from the introduction of bluegill. This was not unexpected, as largemouth bass research in Idaho suggests growth in northern Idaho is not strongly related to forage abundance (Dillon 1992).

Rainbow trout were presumably all of hatchery-origin and stocked as catchable-size fish. Although scales from rainbow trout were not analyzed, length-frequency-analysis and length-at-stocking information indicates that fish greater than 300 mm were holdovers from 1996 stocking. The modal-size category for fish stocked in 1997 was 260 to 269 mm, and modal-size for the presumed 1996 holdovers was 330 to 339 mm (Figure 25).

Robinson Lake

Lake Characteristics and Management-Robinson Lake is a 24 ha natural lake located in northeastern Boundary County near the Canadian border (Figure 26). The lake is mostly surrounded by National Forest land, but a portion is privately owned. The U.S. Forest Service operates a fee camping facility on the southwestern side of the lake and a free boat launch on the northeastern side of the lake. Robinson Lake is managed as an "Electric Motors Only" lake under IDFG fishing regulations.

Robinson Lake provides both cold-water and warmwater fisheries. Six to nine thousand catchable rainbow trout are stocked annually in Robinson Lake providing a put-and-take trout fishery. In addition to rainbow trout, fingerling brook trout *S. fontinalis* are occasionally stocked, and Gillon Creek supports some natural reproduction of brook trout. Largemouth bass and pumpkinseeds *L. gibbosus* provided the warmwater fishery until 1989, when bluegill were added. The lake is somewhat "U-shaped" with two distinct habitat types connected by a narrow gap. The larger portion is shallow (mean depth approximately 2 m, max depth approximately 3 m), macrophyte covered, and provides extensive littoral habitat. The northwestern portion of the lake is deeper basin (maximum depth approximately 7 m) with macrophytic cover restricted to the shoreline. Because the surrounding land is largely timbered, large woody debris provides extensive cover around the Robinson Lake shoreline.

Outflow of Robinson lake runs around 0.5 km to Round Prairie Creek. Prior to the 1930s, inflow was restricted to springs and runoff from the immediate area. Because of the mean depth and extensive macrophyte growth, and lack of significant inflow, Robinson Lake was subject to winter kills during extended periods of ice cover, and summer water temperatures limited coldwater fish habitat to a small portion of the lake. A water diversion from Gillon Creek was dug in the 1930s to provide supplemental inflow. The diversion was repaired and modified in 1959 and again in 1985, and has been successful in improving trout habitat and winter survival.

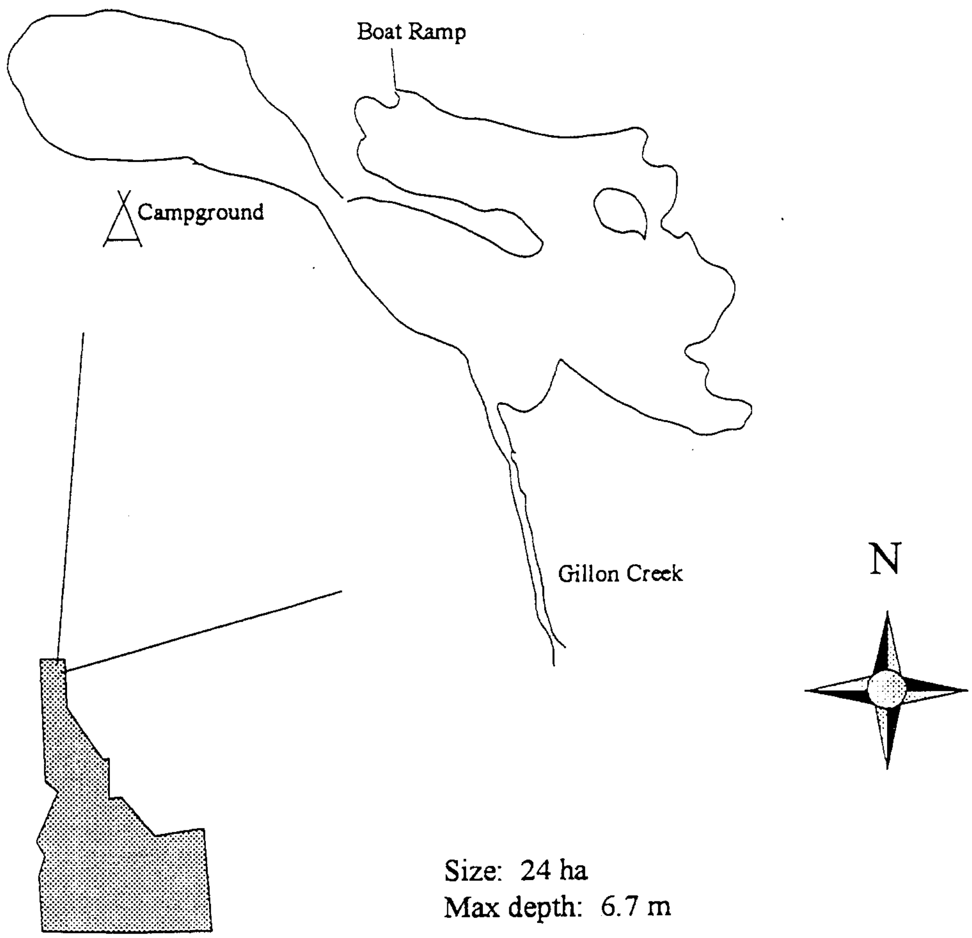


Figure 26. Location of Robinson Lake, Boundary County, Idaho.

Limnological Characteristics-Robinson Lake is a shallow, eutrophic lake. A temperature/DO profile in the deepest section of the lake indicated high epilimnetic water temperatures (>21°C down to 5 m) and a nearly anoxic hypolimnion (Figure 27). During summer periods of thermal stratification, trout habitat is restricted to a limited range of depths (5-6 m) in the northwestern portion of the lake. The estimated total volume of trout habitat in late July was approximately 39,000 m^3, only 6.1% of the entire lake volume. Water transparency was relatively good in late July, with Secchi disk visibility of 4.5 m. Total alkalinity was 50 ppm, and pH was 7.1 (both were uniform from the surface to the bottom). Conductivity was 18μ.

Fishery Characteristics-The catch-per-unit of combined gear sampling effort during the 1997 survey was 350 fish with an estimated total weight of 33.68 kg. Species composition included bluegill, pumpkinseed, largemouth bass, rainbow trout, brook trout, and largescale suckers (Figure 28). Most of the fish collected in the Robinson Lake sampling effort were game species (98% by number, 91% by weight). The remaining non-game species were largescale suckers *C. macrocheilus*. Warmwater fish (largemouth bass, bluegill, and pumpkinseeds) were far more abundant than the coldwater fish (hatchery rainbow trout and brook trout) making up 94% of the sample by number and 82% by weight.

We collected a total of 215 largemouth bass, or a CPUE of 137. Largemouth bass were the most abundant species collected, comprising 39% of the sample number and 48% of the sample weight. Length ranged from 120 to 469 mm (Figure 29), with a PSD of 23 and RSD-P of 3.5. Relative weight was average at small sizes, but decreased with length and was 87to 89 for the largest fish collected. Largemouth bass growth was average for regional waters with fish generally achieving quality size (300 mm) at 5 to 6 years of age. The largest fish collected (469 mm) was estimated to be 10 years old.

Bluegill were the second most abundant species collected both by number (38%) and by weight (20%). We collected a total of 203, or a CPUE of 134. Length ranged from 70-212, with a modal-size range of 90-110 (Figure 29). Although there were a large number of "quality" size fish (150 mm; PSD = 30) we collected few fish greater than 200 mm and RSD-P was only one. Growth estimation based on scale analysis indicated that bluegill are growing well, with fish achieving 200 mm around six years of age. As with Brush Lake, bluegill were stocked in Robinson Lake in 1989 with only 408 adult fish. The relative abundance, size structure, and growth analysis indicates the bluegill population is young and expanding rapidly. The stock density indices will likely improve in the next few years.

All rainbow trout collected appeared to be hatchery fish stocked as catchables, ranging in length from 180 to 275 mm. Although we did not analyze scales of rainbow trout, length frequency analysis suggests that, of the 22 rainbow trout caught, 4 were holdover fish from 1996. Brook trout ranged in length from 310 to 369 mm. Based on scale analysis these fish were all three years of age and were likely from a group of 2,000 fish stocked in May, 1995 as 125 mm fingerlings. If so, brook trout growth is particularly good in Robinson Lake. Rainbow trout and brook trout were caught in all areas of the lake in floating and sinking gill nets during the June sampling effort when surface water temperature was only 14 °C. No trout were collected east of the narrows in late July, when surface temperature was 23 °C, indicating that, as expected, trout are restricted to the northwestern basin of the lake during mid-summer.

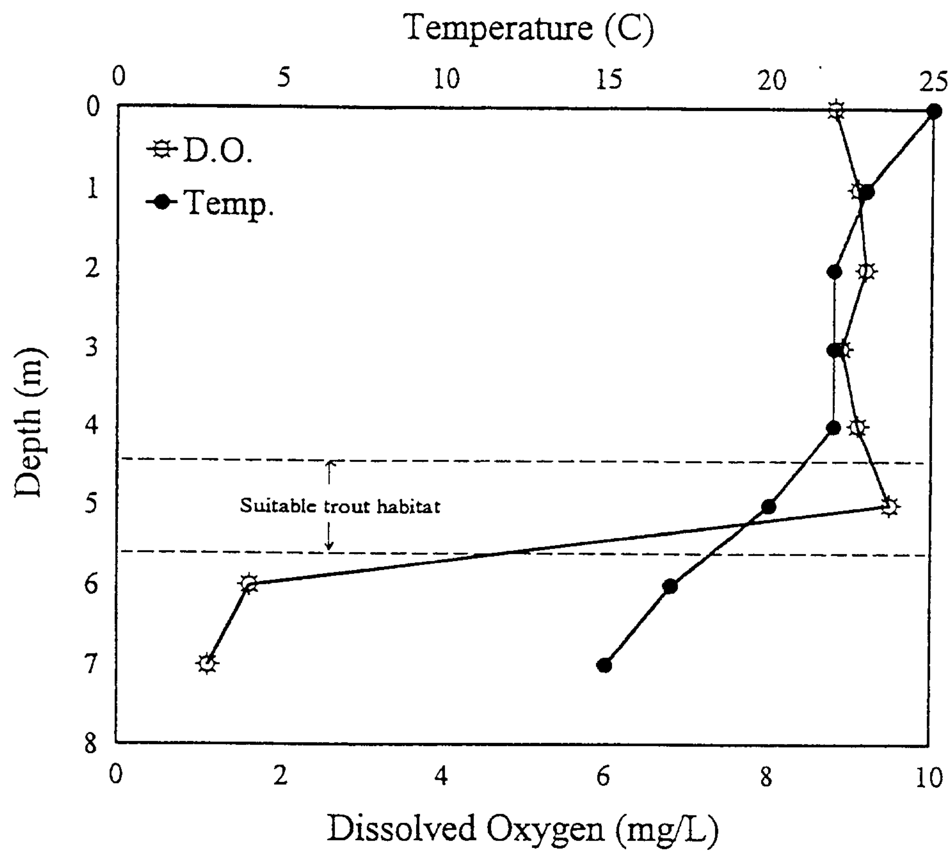
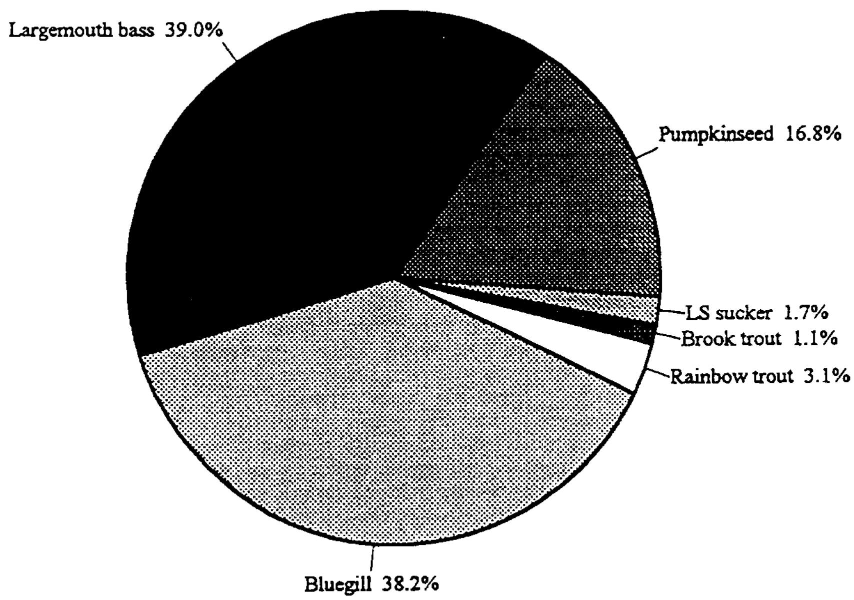


Figure 27. Temperature and dissolved oxygen profile of Robinson Lake, Idaho, on July 31, 1997. Suitable trout habitat was defined as DO greater than 5 ppm and temperature less than 21° C.

Number in Sample



Weight of Sample (kg)

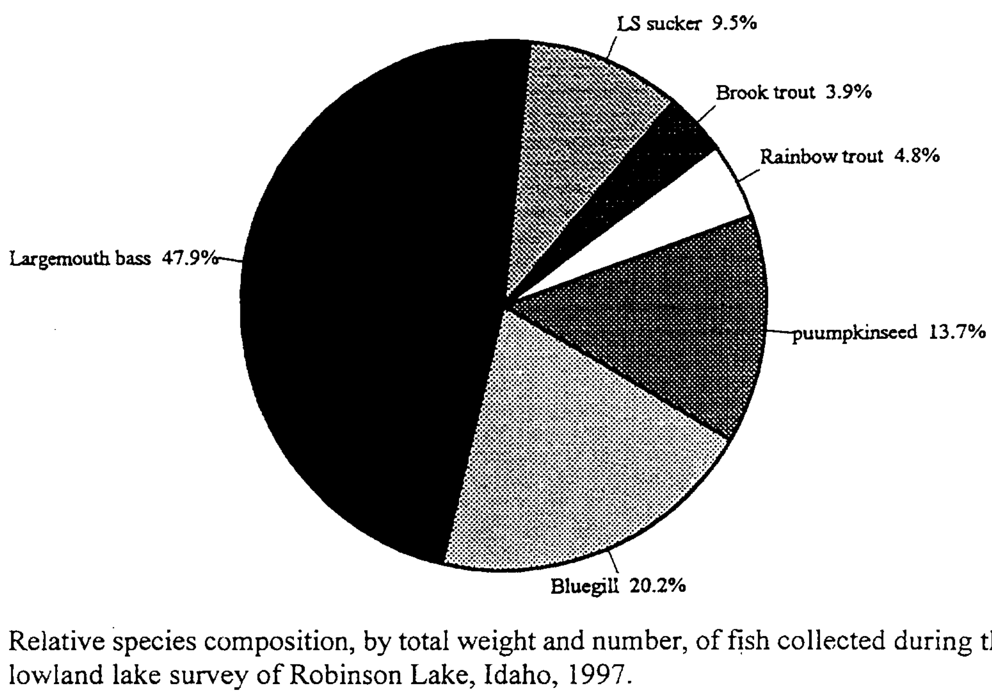


Figure 28. Relative species composition, by total weight and number, of fish collected during the standard lowland lake survey of Robinson Lake, Idaho, 1997.

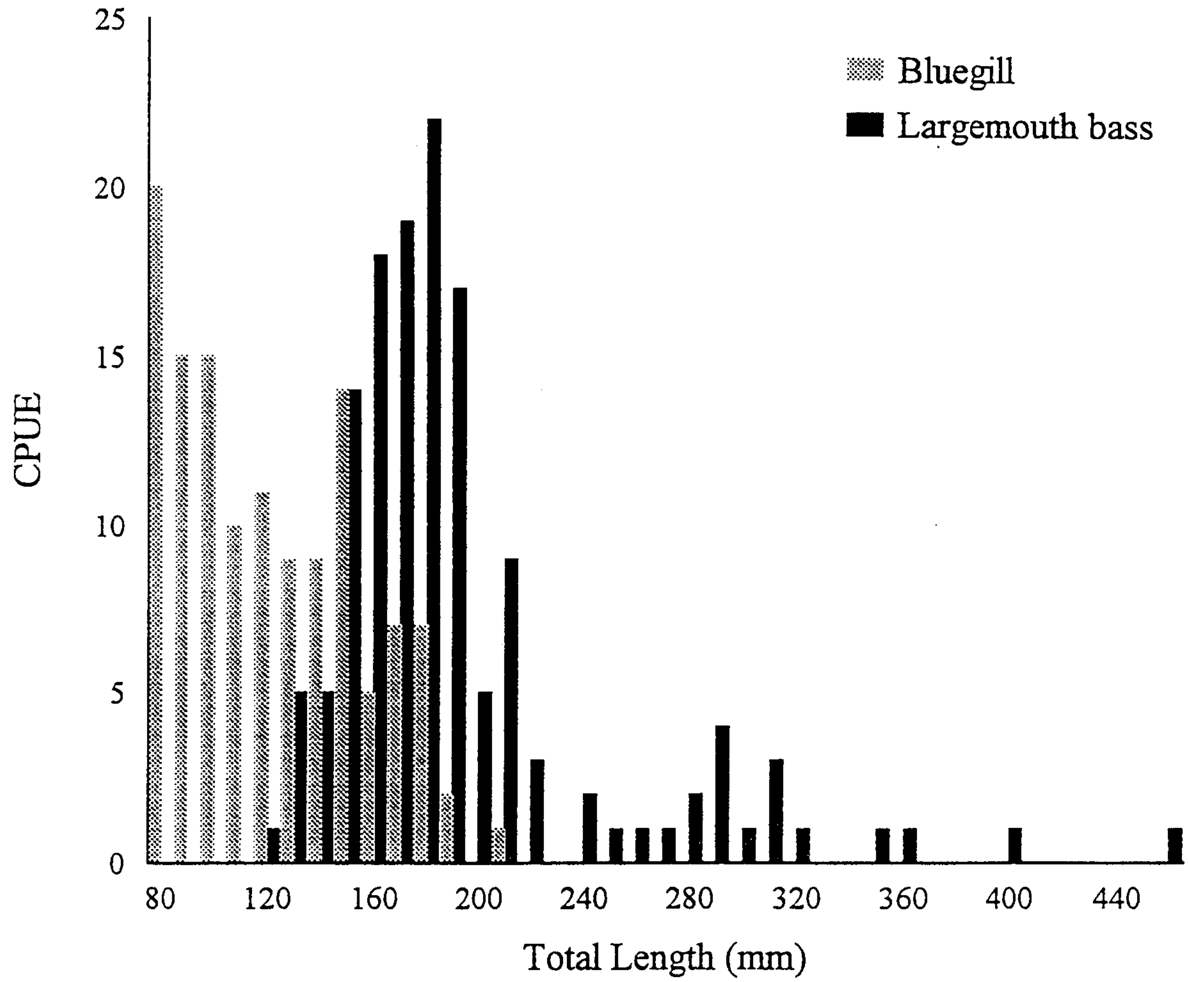


Figure 29. Length frequency of bluegill and largemouth bass collected during the standard lowland lake survey of Robinson Lake, Idaho, 1997.

Shepherd Lake

Lake Characteristics and Management- Shepherd Lake is a 41 ha lake located in Bonner County, about 2 km east of Highway 95 at Sagle (Figure 30). The majority of land surrounding the lake is owned by the IDFG and managed as a Wildlife Management Area (WMA). A no-fee public camping facility, boat ramp, and dock are located on the eastern side of the lake. An unimproved road, open during the summer months, provides access to the western side of the lake, where there is shoreline access and two docks. The lake is restricted to "Electric Motors Only" boating.

Shepherd Lake is managed for warmwater fisheries under general season and limits. Largemouth bass, black crappie, yellow perch, pumpkinseeds, and bullheads have been present in Shepherd Lake since before the 1950s. In 1989 and 1990, bluegill were stocked to provide an additional high yield, low-tech fishery, and tiger muskies were stocked to provide a trophy fishery. The lake was surveyed in 1992 to evaluate the success of the new introductions. No bluegill and only one tiger muskie *Esox lucius x E. masquinongy* were sampled. Following the survey, it was recommended the lake be surveyed again in 1997 to re-evaluate the bluegill and tiger muskie introductions.

Limnological Characteristics-Shepherd Lake is a eutrophic system, with warm epilimnetic water temperatures and an anoxic hypolimnion. Shepherd Lake has not been managed for any coldwater fish because of a lack of suitable habitat. The 1997 survey confirmed the absence of suitable trout habitat. Based on a temperature and D.O. profile in late July, there was no water with suitable temperatures (<21°C) and sufficient oxygen (>5 mg/L) to support salmonids (Figure 31). Shepherd Lake was moderately transparent, with Secchi disk visibility ranging from 2.6 to 2.8 m. Total alkalinity was 30 ppm, pH was 7, and conductivity was 18μ.

Fishery Characteristics-The catch per unit of combined gear sampling effort during the 1997 survey was 229 fish with an estimated total weight of 27.45 kg. Species composition included bluegill, pumpkinseed, largemouth bass, black crappie *Poxomis nigromaculatus*, yellow perch *Perca flavescens*, and tiger muskie (Figure 32). All fish collected were gamefish.

Bluegill comprised the most abundant species by number (50% of sample) and the second most abundant species by weight (33% of sample). This is a very notable increase in abundance since the 1992 survey when no bluegill were collected in the standard lake survey. Bluegill ranged in length from 70 to 219 mm (Figure 33). The size structure indices reflected a large number of quality (150 mm) and preferred (200 mm) size bluegill, with PSD and RSD-P values of 46 and 7, respectively. Growth was equal to or better than North American lakes at comparable latitudes (Carlander 1977), with bluegill achieving 200 mm around age-7. Relative weight was generally average, with a slight decline in larger fish.

Largemouth bass were the most abundant species by weight (38% of the sample) and the third most abundant species by number (17% of the sample). Largemouth bass ranged in length from 80 to 439 mm (Figure 33). Based on scale analysis and back-calculation, largemouth bass growth was slow relative to other Idaho lakes (Dillon 1992), with fish generally not achieving 300 mm until age-7. Proportional stock density was 49, indicating a large percentage of quality size fish. This is a notable increase from the 1992 survey, when the sample PSD was only three. During the 1997 sample collection, it was noted that largemouth bass

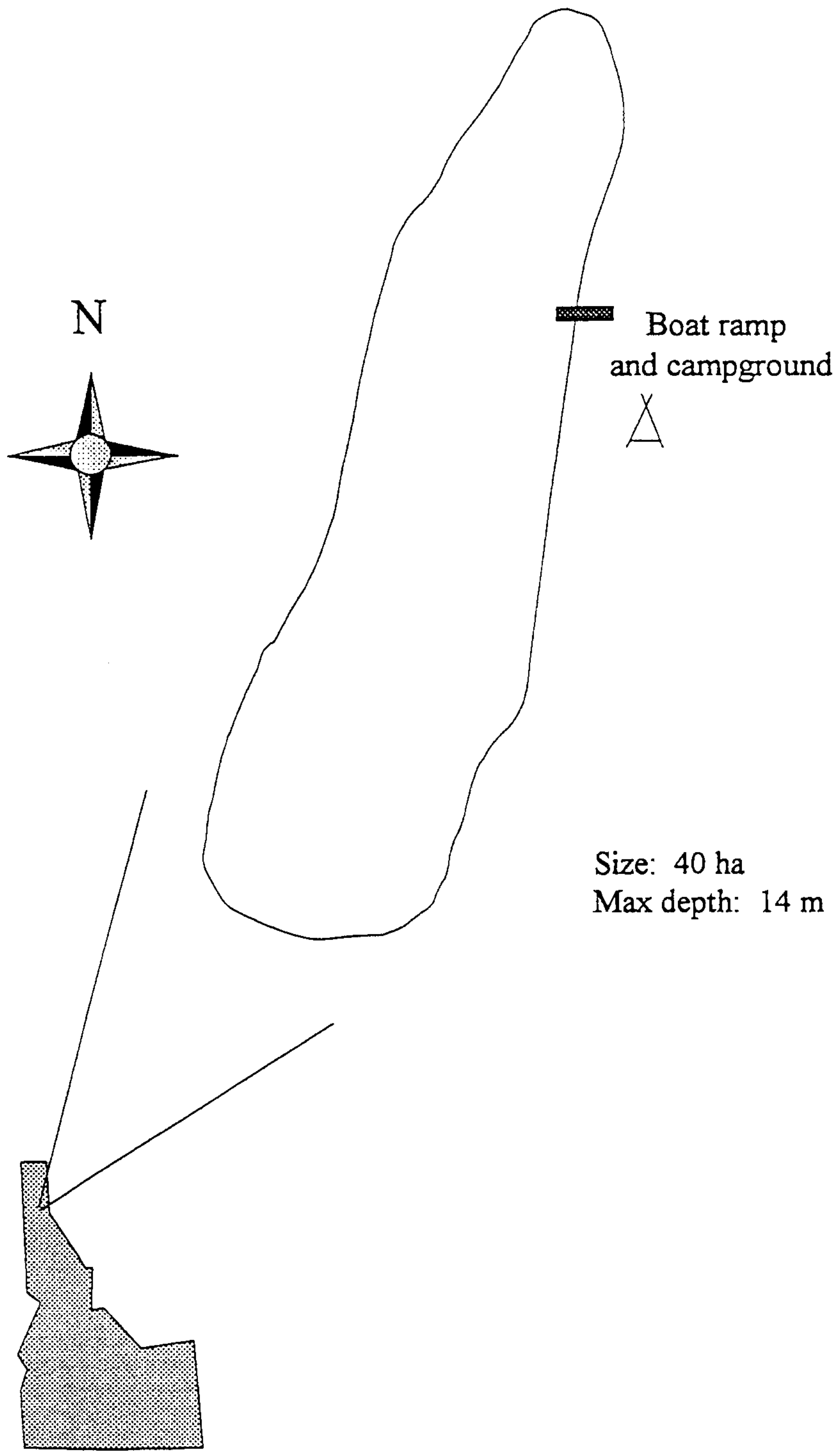


Figure 30. Location of Shepherd Lake, Bonner County, Idaho.

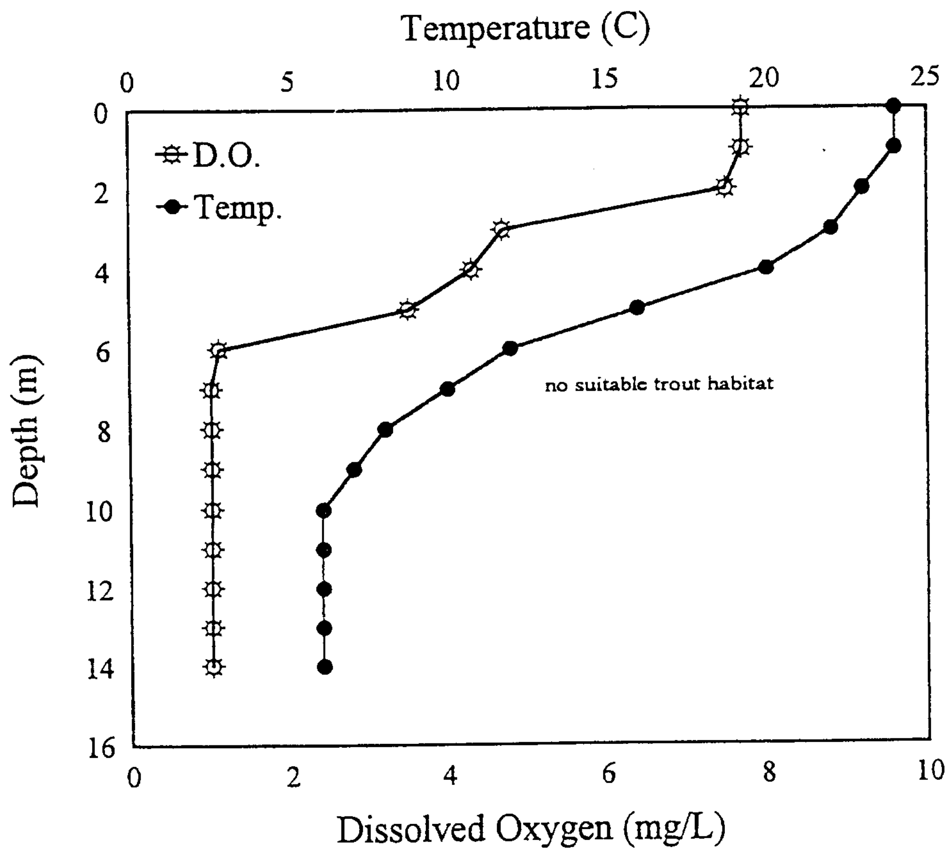
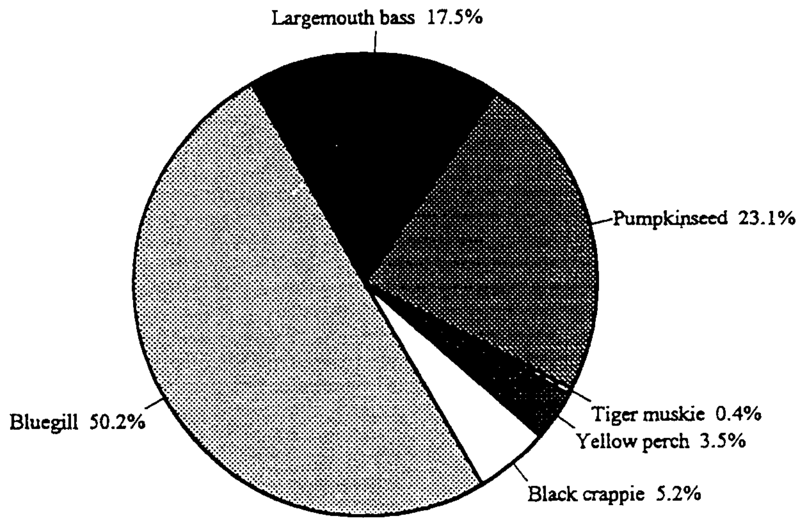


Figure 31. Temperature and dissolved oxygen profile of Shepherd Lake, Idaho, on July 29, 1997.

Number in Sample



Weight of Sample (kg)

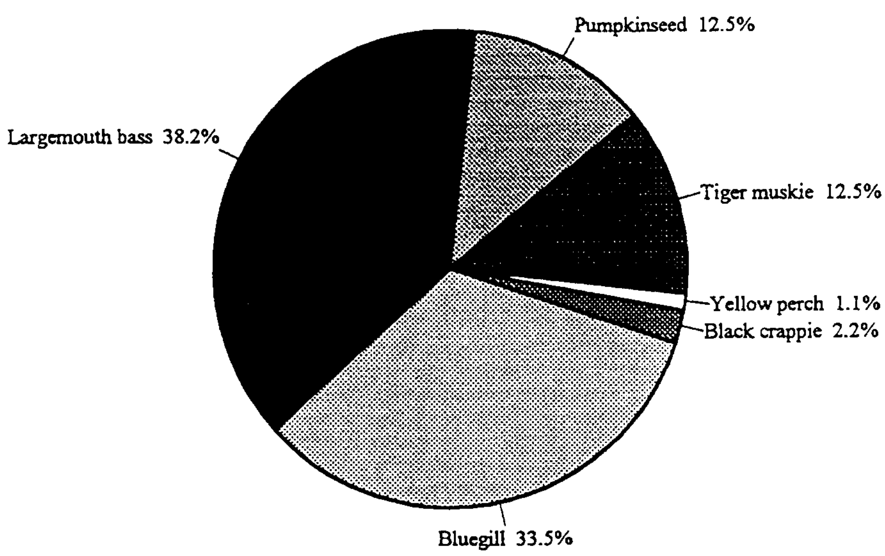


Figure 32. Relative species composition, by total weight and number, of fish collected during the standard lowland lake survey of Shepherd Lake, Idaho, 1997

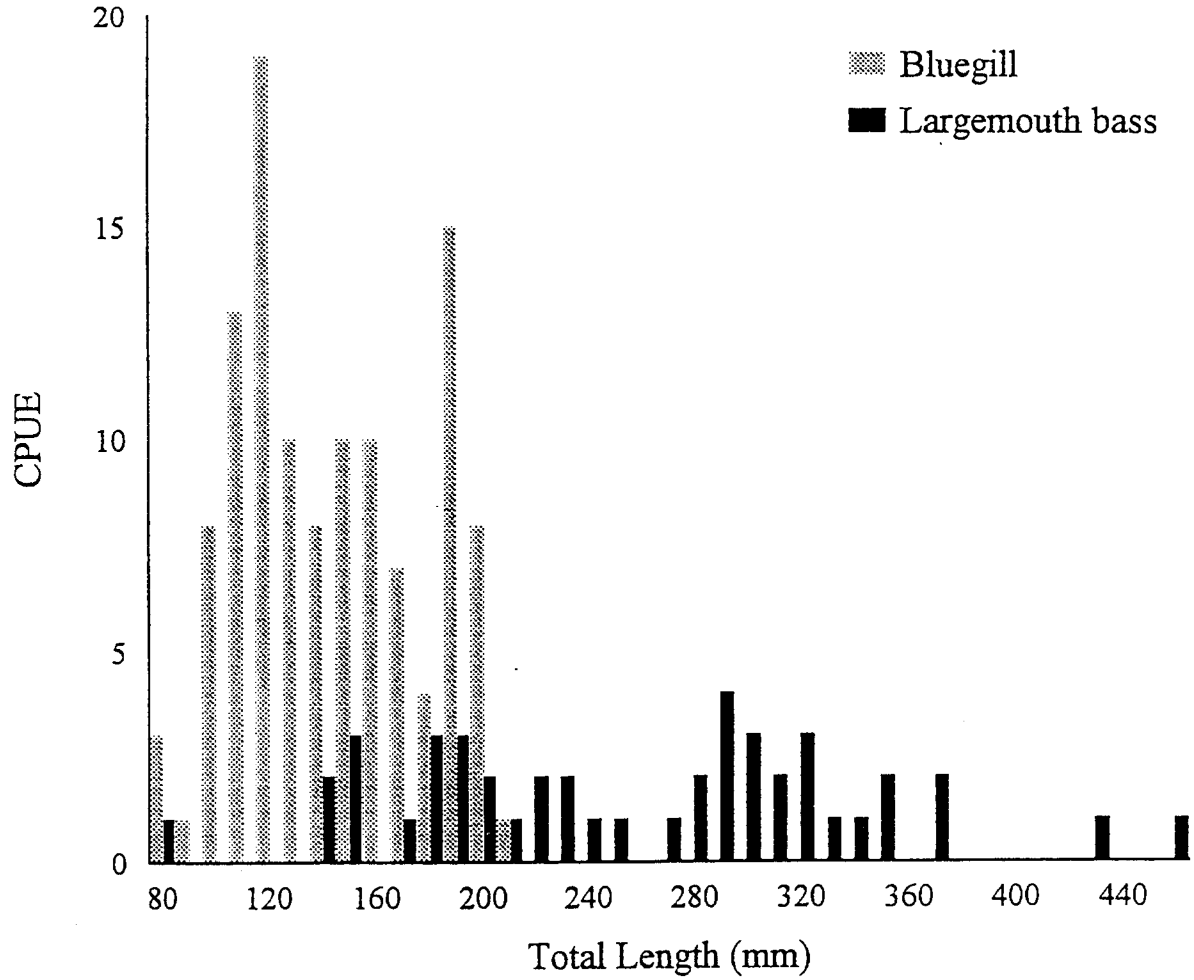


Figure 33. Length frequency of bluegill and largemouth bass collected during the standard lowland lake survey of Shepherd Lake, Idaho, 1997.

appeared to be thin. This observation was confirmed by W_r values, most of which were below 90%. Similar values were also recorded in the 1992 survey, indicating the proliferation of bluegill has not affected W_r.

Pumpkinseeds were the second most abundant fish species collected in the sample by number (23%) and the third most abundant species by weight (13%). Although we collected pumpkinseeds up to 199 mm, most were too small to contribute significantly to the fishery. We collected several fish that appeared to by hybrids of pumpkinseeds and bluegill. According to Scott and Crossman (1972) the apparent hybridization is to be expected:

> "The hybrid of this species and the pumpkinseed occurs virtually wherever these two live together....(and) the degree of hybridization is so great and the range of characters so confusing as to make it almost impossible to separate hybrids from back crosses with parental species, or even to designate pure parental forms."

Two tiger muskies were caught in the sampling effort, both with gill nets. Both fish were of a legally harvestable size (762 mm)--the smaller fish was 805 mm, and the larger fish was 846 mm. Both fish weighed approximately 3.5 kg. We counted seven annuli on the larger fish, indicating it was likely one of the 352 fish released in 1990. A total of 957 fish were released from 1989 to 1993. If the two fish collected in 1997 represent typical growth, we can expect that a large percentage of the remaining tiger muskies are now of a legally harvestable size.

Yellow perch comprised only 4% of the sample by number and 1% of the sample by weight. They were the least abundant fish species in the sample (by weight). This is much different than the 1992 survey, when yellow perch were the most abundant species in the sample, comprising 31% by number and 47% by weight (Horner et al. 1996). Yellow perch ranged in size from 100 to 229 mm.

Black crappie were also relatively non-abundant in the sample, comprising 5% by number and 2% by weight. Although not as severe as with yellow perch, this is also a marked decline from 1992, when black crappie comprised 30% by number and 16% by weight of the sample. Black crappies ranged in length from 70 to 209 mm, and ranged in age from 2 to 5. The modal-size category was 170-179 mm and modal age was two.

Bluegill Introduction Assessment Results

Bluegill growth was similar throughout the five lakes surveyed (Table 18). Bluegill generally achieved a "stock" length (80 mm; Gablehouse 1984) at two years of age and a "quality" length (150 mm) at four years of age (Figure 34). "Preferred" size bluegill (200 mm) were not found in all of the lakes surveyed, but in lakes where they were found (Robinson, Brush, and Shepherd), the age of preferred size fish ranged from six to eight years.

Bluegill size structure varied between populations (Table 19). The PSD ranged from 19 in Brush Lake, indicating a lack of quality size fish, to 46 in Shepherd Lake. The RSD-P (proportional stock density of "preferred" size fish) was from zero (Rose and Kelso lakes) to seven, with Shepherd Lake again providing the greatest percentage of large bluegill. The lack of larger fish in Kelso and Rose lakes may be an artifact of the year the lakes were surveyed (1995). The greater abundance of older fish in Shepherd, Robinson, and Brush lakes is likely due, in part, to the two additional years of growth. The catch-per-unit of electrofishing effort also suggests that the populations were less developed in the lakes surveyed in 1995 (Table 19).

Table 18. Stocking history of bluegill in northern Idaho lakes and back-calculated length (at time of annulus formation) at age.

	Stocking history		Length at Age (mm)							
Lake	Year	Number	I	II	III	IV	V	VI	VII	Comments
Rose	1990	15,000	41	84	130					Horner et al. (1997)
Kelso	1982	400	45	80	127	160				Horner et al. (1997)
Shepherd	1990[a]	12,000	48	81	114	151	167	187	199	1997
Brush	1989	238	56	94	139	169	185	182	191	1997
Robinson	1989	408	58	94	132	161	188	208	210	1997
Dawson	1990[b]	9,000				not surveyed				
Smith	1989[c]	100			did not establish population					
Mean of Panhandle Lakes			50	87	128	160	180	192	200	
Mean of North American Means			53	95	128	153	173	189	200	(Carlander 1977)

[a] 300 bluegill also stocked in Shepherd in 1989
[b] 130 bluegill also stocked in Dawson in 1989
[c] Population not successfully established

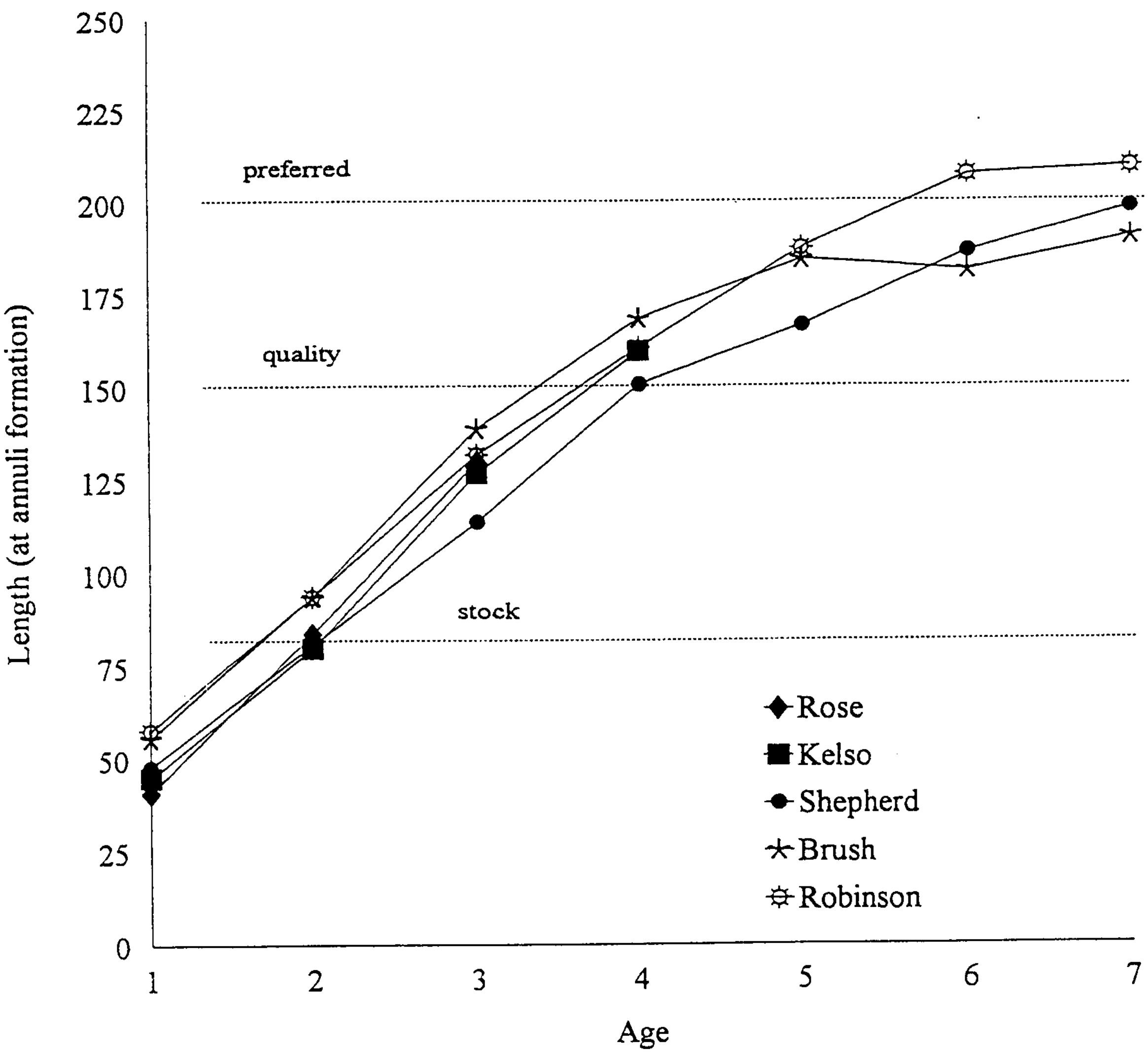


Figure 34. Length-at-age, based on back-calculation of scales, of bluegill collected from Idaho Panhandle Regional lakes.

Table 19. Range of lengths, relative weight (W_r), catch per minute of electrofishing effort (CPUE), proportional stock density (PSD), and relative stock density of "preferred" size (200 mm) bluegill (RSD-P) in northern Idaho lakes.

Lake	TL Range	CPUE	PSD	RSD-P	TL at age-3	W_r (200 mm)
Rose	50-180	0.25	29		130	73
Kelso	50-169	0.60	26		127	88
Shepherd	70-217	1.19	46	7	114	96
Brush	80-210	3.51	19	2	139	112
Robinson	70-212	2.23	30	1	132	103

Bluegill condition, as indexed by W_r, varied widely between the surveyed lakes, but was generally comparable to the standard bluegill weight relationship developed by Hillman (1982). Relative weight of 200 mm bluegill in all lakes surveyed since 1995 ranged from 73 to 112. Length-weight relationships of bluegill collected in 1997 were similar to the standard weight relationship, with the exception of bluegill from Brush Lake which were slightly heavier (Figure 35).

In the three lakes surveyed in 1997, bluegill were either the first or second most abundant species by number and by weight. Bluegill comprised 38 to 65% of the samples by number and 20 to 39% by weight. The increase from absence to near dominance in less than 10 years demonstrates that bluegill clearly have the potential to proliferate in northern Idaho lakes. Although we did not collect maturity information on a large sample of fish, we did find mature age-2+ (just beginning their third year) males and females ranging from 139 to 146 mm in Brush Lake. We also found immature age-2+ males and females, indicating a variable age at maturity. Based on summarized data throughout North America (Carlander 1977) bluegill typically mature at one to two years of age, but age at maturity is variable. Many fish collected in late July 1997 had not yet spawned, or were repeat spawning.

The impact on pre-existing populations of other fishes seems variable. In Shepherd Lake, there was a very notable decline in the relative abundance of yellow perch and black crappie. Both species comprised around 30% of the sample (by number) in 1992 and only about 5% of the sample in 1997, while bluegill increased to 50% of the sample. Absolute abundance, based on a standard unit of lowland lake sampling effort, also declined. In 1992, one unit of effort yielded around 13 kg of yellow perch and 4.5 kg of black crappie, whereas in 1997 the same effort yielded less than 1 kg of each. Interestingly, the total amount of biomass in the sample varied little between efforts. The total weights of the fish samples were 28 and 27.5 kg in 1992 and 1997, respectively, suggesting that yield has not changed. Unfortunately, sufficient data on the impacts of bluegill to these species in other lakes is lacking. Bluegill did not comprise as much of the sample in Kelso and Rose lakes as the lakes surveyed in 1997 (less than 20% of the total fish sample), suggesting the populations were still expanding. Furthermore, we have insufficient baseline data to hypothesize on the impacts to yellow perch and black crappie.

Relative abundance of pumpkinseed and largemouth bass seemed much less affected. Largemouth bass comprised 17% of the sample (by number). Some indices of largemouth bass stock status improved following bluegill introductions, while others declined (Table 20). The length-weight relationship of largemouth bass did not improve in Rose Lake, where W_r (300 mm) was 80 in 1990 and 77 in 1995. These values indicate poor condition largemouth bass both before and after bluegill were established. The W_r of largemouth bass in Shepherd Lake was 83 in 1992 and 84 in 1997, again, low in both years and not a noticeable change. Relative weight of largemouth bass in Brush Lake was 112 in 1990, then declined to a below average value of 92 in 1997. Growth of largemouth bass in Robinson Lake was assessed in 1982, and the length of age-6 fish was back-calculated at 318 mm. In 1997, length of the same age fish was back-calculated at 320 mm. Largemouth bass PSD increased from 3 to 53 in Shepherd Lake and from 15 to 23 in Robinson Lake. However, PSD decreased from 20 to 9 in Brush Lake and from 32 to 24 in Rose Lake.

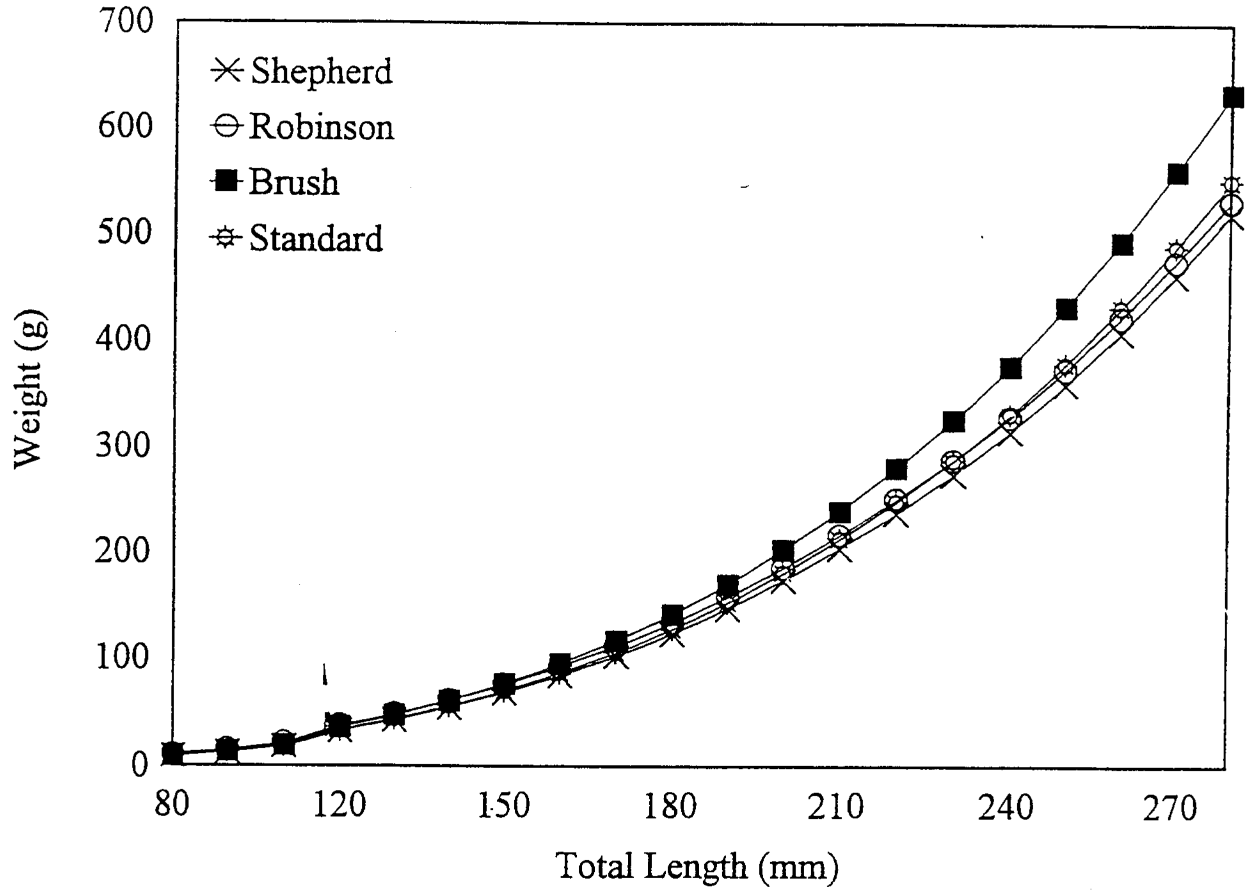


Figure 35. Length-weight relationship of bluegill collected in Idaho Panhandle Regional lakes during the 1997 surveys as compared with the standard bluegill length-weight relationship.

Table 20. Largemouth bass stock assessment indices before and after bluegill populations were established in northern Idaho lakes.

Index	Lake	Before	After	+/-
PSD	Shepherd	3	53	+
	Brush	20	9	-
	Robinson	15	23	+
	Rose	32	24	-
Relative Weight (300 mm)	Shepherd	83	84	no change
	Brush	112	92	-
	Rose	80	77	no change
Length at age-6	Robinson	318	320	no change

Angler Creel Surveys

Officer Creel Survey

Conservation Officers collected creel survey information from 790 residents and 335 non-residents, for a total of 1,125 anglers on 35 regional lakes and sloughs in 1997. In total, 2,136 angler hours were represented over 54 days in the lakes portion of the officer creel survey (Appendix A).

DISCUSSION AND RECOMMENDATIONS

Fish Population Characteristics

Coeur d'Alene Lake

Kokanee and Chinook Fisheries-The low adult kokanee population, as estimated by trawling, was consistent with angler harvest information from Coeur d'Alene Lake. Although catch rates were inconsistent, harvested kokanee were much larger than in recent years, and anglers were generally very satisfied with the fishery, particularly when fish concentrated in the northern part of the lake in September and October. The low numbers of age-2 kokanee indicate that the fishery in 1998 will be supported by even fewer adult fish, and size of fish in the catch will, again, be larger than in recent years.

The low densities of these two age-classes of kokanee are likely less a result of chinook salmon predation than of the high volume of runoff associated with the winter of 1996 and spring of 1997. Although the number of chinook salmon stocked and produced naturally in 1995 and 1996 was high in comparison with previous years, there was a conspicuous lack of two and three year-old chinook salmon in the fishery and in the spawning escapement in 1997. This suggests that chinook salmon were not the primary factor associated with the low abundance of age-2 and age-3 kokanee. Predation by age-0 and age-1 chinook, however, may have contributed to the low survival of these two kokanee age-classes. An estimated 57,000 and 70,000 chinook smolts (hatchery and wild combined) entered the lake in 1994 and 1995, respectively. Although these two year-classes of chinook were severely impacted by the high flows of 1996 and 1997, they may have had a significant predation impact as age-0 and age-1 chinook feeding on age-0 and age-1 kokanee.

Regression analysis of the relationship between age-2 kokanee abundance and the level of chinook stocking suggests that, although many other factors affect the kokanee population, optimal kokanee density is associated with a combined hatchery and wild recruitment of around 60,000-80,000 chinook smolts. The suitability of this level of stocking is dependent on several factors. The first is the total harvest and size-of-harvest by chinook anglers. An angler initiated shift toward an expanded catch-and-release fishery, or the occurrence of environmental factors which limit anglers ability to catch chinook, could lead to an unanticipated increase in kokanee predation. The second factor is the age-at-maturity of chinook. We expect future supplementations to be comprised of fish that typically mature one to two years later than does the current stock. Because of the poor chinook escapement in 1998, we plan to supplement the Coeur d'Alene Lake chinook population with approximately 55,000 fall chinook smolts purchased from Washington Department of Wildlife's Priest Rapids Hatchery. These fish typically mature at age-4, as opposed to the current Coeur d'Alene Lake stock, which matures at age-2 and age-3. A delayed age-at-maturity will increase the number of kokanee consumed by (and therefore the cumulative predatory impact of) a longer lived chinook. Finally, several factors may affect the kokanee population independent of the level of chinook stocking. A depressed year-class of kokanee (resulting from factors such as outmigration, egg survival, smallmouth bass predation, or angler harvest) may not be able to withstand the impacts of 70,000 chinook smolts.

Based on the random completed trip survey information, incidental harvest of juvenile chinook by kokanee anglers was not a significant factor in 1997. The majority of boats surveyed had anglers aboard who claim they were sufficiently aware of the presence and identification of juvenile chinook. Although 40% of the boats did not have anyone fishing on board who was aware of the possibility of incidental chinook catch, the extremely low abundance of such incidental catches seemed to nullify the impacts by these anglers. It is important to note, however, that only 12,500 hatchery chinook smolts were released in 1997. In years when 30,000 or more chinook smolts are released in Wolf Lodge Bay, there may be a higher rate of incidental catch.

Smallmouth Bass-First confirmed observation of smallmouth bass in Coeur d'Alene Lake was near the Third Street boat ramp in 1990 (V.L. Paragamian, personal communication). Although the origin of these fish is not clear, they were likely transported illegally from Hayden Lake, where they were introduced by IDFG from 1983 to 1986. Seven years after this initial confirmation, smallmouth bass are very abundant in the northern end of Coeur d'Alene Lake. Furthermore, the predominance of age-2 and age-3 fish in the electrofishing sample suggests the population is young and will continue to expand in the next few years. We did not collect a large number of legal size (305 mm) fish and the relatively low PSD and RSD-P values depict a population comprised of smaller fish. Age analysis indicates smallmouth bass growth is comparable to similar waters, and suggests that numerous legal size fish will enter the fishery in the next couple of years.

Recommendations-1) Continue to target an annual recruitment of 70,000 chinook smolts (30,000 hatchery, 40,000 wild fish); 2) continue to monitor kokanee abundance and length-at-age; 3) continue to educate anglers about the complexity of the predator/prey dynamics and the importance of harvesting chinook; 4) conduct additional unstructured, completed trip creel checks in 1998 to evaluate the extent of incidental juvenile chinook harvest when a greater number of chinook smolts are stocked.

Spirit Lake

The low adult kokanee density (11 age-3 fish/ha) in Spirit Lake, as indicated by midwater trawling, was evidenced as poor fishing during the summer months. Anglers complained of very few fish being located and caught after the winter and spring fisheries. The extended ice-fishery combined with the popular spring handline fishery likely contributed significantly to the low abundance of adult fish in July and August. Furthermore, this particular year-class of kokanee has been a weak year-class since they were estimated as fry in 1994. This may be a result of a weak parental year class in 1993, when age-3 kokanee density was only 20 fish/ha. However, because this year-class had been identified as being weak in 1993, 383,550 fry were stocked in 1994 to supplement the wild production. These fish never did seem to contribute to the population, as only 11,800 fry were estimated by trawling soon after the fry were stocked.

The 1997 kokanee fishery in Spirit Lake delineated a potential conflict between the summer anglers, who tend to be seasonal homeowners, and the more traditional Spirit Lake anglers, who comprise the winter ice-fishery and the spring handline fishery. There was a widely held perception that the poor summer fishing was the result of an excessive winter and spring fishery. Consequently, many anglers have requested restrictions on the season and/or daily limit. Because of the atypical duration of the ice-fishery, combined with a low year-class to begin with, however, the absence of a summer kokanee fishery is not likely to be an annual occurrence.

Recommendations-1) Conduct a winter creel survey on Spirit Lake to assess the contribution of the ice-fishery to total annual kokanee harvest; 2) continue to monitor kokanee abundance and length-at-age by midwater trawling.

Upper Priest Lake

The 1997 gillnetting and angling efforts confirmed the presence of a well established lake trout population in Upper Priest Lake. The relative catch composition of lake trout and bull trout in volunteer angler diaries indicates a progressive increase in the relative abundance of lake trout and a decreasing relative abundance of bull trout (Figure 36). Furthermore, the size distribution of lake trout depicts a relatively young and expanding population. Many of the fish collected are currently, or soon will be, of reproductive age. The collection of numerous juvenile fish <300 mm suggests lake trout have reproduced successfully in Upper Priest Lake.

This expanding lake trout population is very likely a threat to the persistence of the bull trout population in Upper Priest Lake. Evidence suggests that lake trout and adfluvial bull trout did not naturally develop sympatric populations (Donald and Alger 1993). In addition, bull trout populations in many lakes, outside of the Priest Lake drainage, where lake trout have been introduced are in decline (Donald and Alger 1993).

Anglers and fishery scientists have increasingly questioned the utility of a sport fishery to reduce the lake trout population in Upper Priest Lake and similar systems (Montana Bull Trout Scientific Group 1996). The angler catch composition represented in this assessment, however, suggests angling is not an ideal means to reduce the lake trout population without creating an additional threat to bull trout. Inasmuch as the ratio of bull trout to lake trout was higher with angling than with gill nets, there was little evidence that a recreational fishery can be used to selectively harvest lake trout. Instead the evidence suggests the opposite, that bull trout have a relatively higher capture rate than do lake trout. Because anglers were unable to specifically target lake trout over bull trout, limiting angling related mortality of bull trout is a concern, particularly because it appears the largest, most fecund bull trout have the greatest probability of capture. Because fish were caught at depths up to 32 m, mortality related to depressurization and temperature gradient is a concern (Lee and Bergersen 1996; Feathers and Knable 1983). Releasing fish with expanded gas bladders can result in high mortality rates, especially when surface temperatures are much higher than temperatures to which fish were acclimated (Shasteen and Sheehan 1997; Lee and Bergersen 1996). Surface temperature during the intensive angling effort was 20° C whereas temperature near the bottom was 5-7°C. Although deflating gas bladders can improve survival by reducing the time it takes a fish to return to the acclimation temperature and by reducing avian predation (Shasteen and Sheehan 1997; Bruesewitz et al. 1993; Lee 1992), we believe that the risks of relying on recreational anglers to artificially deflate gas bladders of bull trout would outweigh the benefits.

The increasing lake trout population in Upper Priest Lake, and the growing evidence that lake trout have a direct negative effect on bull trout demographics strongly suggest some means of controlling the lake trout population will be necessary to insure the persistence of bull trout. Methods of controlling lake trout populations are currently being explored in other western North American lakes. For example, the feasibility of netting aggregations of spawning adults is being investigated in Yellowstone Lake (Mahony and Ruzycki 1997), and non-lethal, highly efficient commercial pound nets are believed to have potential for controlling introduced lake trout populations in Flathead Lake, Montana (Scientific Advisory Team 1998). The variety of methods currently being

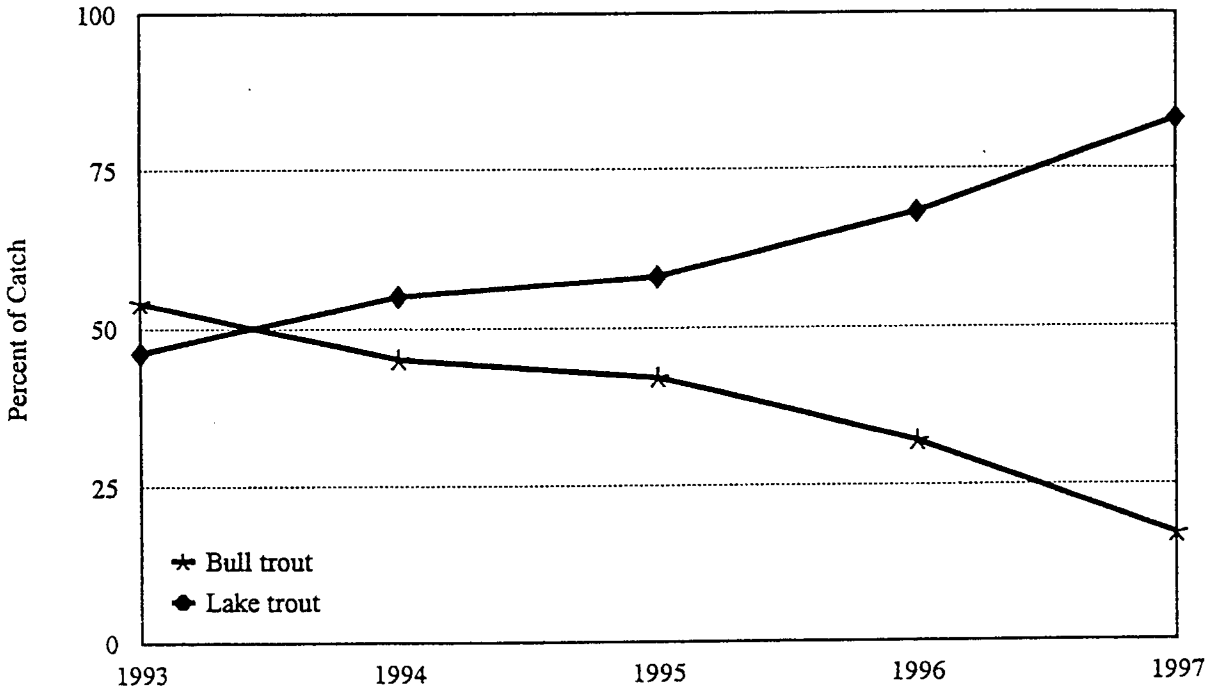


Figure 36. Relative catch composition of lake trout and bull trout caught in Upper Priest Lake, Idaho, and recorded in volunteer angler diaries from 1993 to 1997.

proposed to control lake trout population suggest that additional effort will be needed to determine which of these methods is the most efficient.

Movement of sonic-and spaghetti-tagged lake trout demonstrates that lake trout migration between Upper Priest Lake and Priest Lake is not uncommon. Because all sonic-tagged fish were originally collected in the upper lake, we may have tagged fish with a predisposition to travel between the lakes. Regardless, Priest Lake will likely be a continual source of lake trout recruitment to Upper Priest Lake. Continued tracking of these fish throughout the life of the 48-month tags will continue to provide information on lake trout movement between the two lakes.

Recommendations-1) Begin removing lake trout from Upper Priest Lake using short-set gill nets, trapnets, and other techniques non-lethal to bull trout; 2) continue telemetry of sonic-tagged lake trout; 3) develop a more accurate population estimate of bull trout in Upper Priest Lake.

Bluegill Introduction Assessment

Bluegill growth rates in northern Idaho lakes are, thus far, sufficient to provide quality bluegill fisheries. The relatively short growing season, which is very evident in growth rates of largemouth bass, does not seem to have the same bearing on bluegill growth. Surprisingly, growth rates in the Idaho panhandle are very similar to the mean of means calculated for various regions throughout North America (Table 18). Carlander (1977) reported growth varied widely within particular regions of North America. He stated that growth rates are *generally* higher in areas with longer growing seasons. Indeed, there are lakes where bluegill achieve 200 mm at 3-4 years of age. However, Carlander (1977) suggests that abundance and edaphic conditions may affect growth more than growing season or latitude. Directly in contrast to largemouth bass in Idaho, bluegill growth was *not* related to mean air temperature in Wisconsin, and although growth is typically faster in the southern parts of a specific region, there was not an overall higher growth rate in southern U.S. than the northern U.S. (Carlander 1977). Growing season ranged from 98 to 189 days in northern Indiana and did not seem to be related to any physical or chemical condition. Carlander (1977) suggests that standing crop and carrying capacity are the factors determining the duration of the growing season. Thus far, we have not seen evidence that growth is less in lakes where bluegill were most abundant, however, the literature clearly indicates that growth and abundance are negatively correlated throughout the U.S. At this point, it seems that climate and growing season will not restrict the success of bluegill fisheries. The apparent asymptote in bluegill growth in northern Idaho lakes at around 200 mm is also typical of bluegill throughout North America. Although there are lakes where bluegill continue to grow rapidly up to 250-300 mm, the mean of North American regional means shows that typical growth from age-7 (200 mm) to age-11 (185 mm) is negligible.

Extensive research has been conducted on optimum bass/bluegill ratios and management strategies (Swingle 1950; Novinger and Legler 1978; Willis et al. 1993). The recommended bluegill PSD and RSD-P ranges for balanced (largemouth bass/bluegill) fisheries are 20-60 and 5-20, respectively (Willis et al. 1993). The values in the surveyed lakes are actually more consistent with density indices recommended when managing for low densities of larger bass (PSD = 10-50; RSD-P = 0-10). This is not surprising, given the inherent low densities of bass in regional lakes. The implication of Willis et al. (1993) is that bluegill populations in the surveyed lakes are approaching overabundance, and that we could achieve higher bluegill growth rates and an improved size structure by managing for higher densities of young, faster growing largemouth bass. However, the ability of managers to "fine tune" predator/prey ratios to provide either quality bluegill, quality bass, or a balance between the two, is doubtful in northern Idaho. The lack of a strong relationship between largemouth bass growth and prey availability (Dillon 1992) suggests that we probably will not be able to improve bluegill growth by manipulating the largemouth bass populations. Indeed, we did not see evidence of a consistent response in largemouth bass population characteristics following establishment of bluegill populations. The changes in population structure that we did record are much more likely a result of increased largemouth bass fishing pressure and regulations than of bluegill introductions. The lack of a clear relationship between bluegill growth rates and size structure as affected by abundance (based on CPUE) also suggests bluegill growth, at current population levels, is not highly density dependent. Novinger and Legler (1978) did not see a pronounced decrease in size of age-3 bluegill until PSD declined below 20. All of the lakes in this study (with the exception of Brush, which was 19) were at least 26. Indeed, the low RSD-P values in this study were very likely related more to bluegill age than growth rates, as indicated by the zero values in the lakes surveyed in 1995. As northern Idaho populations continue to expand and age, we can expect to learn more about the factors affecting growth and whether or not intraspecific competition will become a problem.

We saw no evidence of poor bluegill recruitment or of weak year-classes in any of the lakes surveyed. Based on existing bluegill literature, spawning in northern latitude lakes occurs from June through September, but peaks in June or July (typically about three weeks after pumpkinseed spawning). Our observations of spawning bluegill in late July as well as in mid-June indicates an extended spawning period in northern Idaho lakes. Regardless of timing of bluegill spawning, fry survival is apparently sufficient. With expanding populations, as those surveyed presumably are, we would not expect to see a lack of recruitment. Novinger and Legler (1978) found adequate recruitment in ponds where bluegill PSD was at least 10, consistent with the lakes surveyed in this study. At PSD ratios above 50-60, cannibalism by fewer, larger adults and a lack of spawners can limit recruitment. Populations in the lakes surveyed do not seem to be in jeopardy of low recruitment.

A final, and perhaps the most important, point of the bluegill introduction assessment is the evidence indicating that introductions of bluegill cannot be expected to increase fish production from a lake. Total production in Shepherd Lake (based on kg of fish per unit of sampling effort) was almost unchanged even though bluegill increased from non-existence to being the most abundant species in the sample. We can expect other species to decline as bluegill numbers increase. The limited data in Shepherd Lake suggests yellow perch and black crappie are species most affected. However, the concurrent introduction of tiger muskies (with bluegill) in Shepherd Lake may have had a simultaneous or interactive impact on yellow perch and black crappie.

In future years, standard surveys of lakes with introduced bluegill populations will continue to evaluate the quality of bluegill fisheries and the impacts of the newly established populations on pre-existing warmwater fisheries. As populations continue to expand, we may see a density dependent decline in growth. Liberal harvest and biological control measures (e.g. tiger muskies) may be an integral component in maintaining healthy bluegill populations.

Recommendations-1) Conduct standard lake surveys on these initial bluegill lakes in 3-5 years to evaluate growth, relative abundance, and species composition; 2) establish new bluegill populations only in lakes without exceptionally valuable perch fisheries.

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APPENDIX

Appendix A. Summary of 1997 impromptu officer creel surveys of Panhandle Regional lakes.

Lake	Month	# days surv.	no. interviews	resident	non-res	Hours	Fish Type	Equipment	Harvest	Release
Bloom	Jul	1	3	3	0	1	0	B3	0	0
Blanchard	Jun	1	2	2	0	3	LMB:2	S2	0	LMB:2
Brickel	May	1	2	1	1	4	0	S2	0	0
Brush	Jun	2	31	31	0	42	RBT:26, BG:2	S19, B12	28	0
Chase	May	2	19	12	7	14	PS:1	S6, B13	0	1
	Jul	1	5	0	5	2	LMB:2	B5	2	0
Coeur d'Alene	Mar	1	4	4	0	4	0	S2, B2	0	0
	Jun	1	25	18	7	63	KOK:26, NP:1, CHIN:1	S1, B24	28	0
	Jul	3	191	110	81	440	CHIN:4, KOK:174	S5, B186	178	0
Cocolalla	May	3	21	19	2	46	YP:20, CC:2, RBT:1	S21	23	0
	Jun	1	5	5	0	20	YP:8, SF:4	S5	12	0
	Jul	1	13	13	0	32	YP:40	S13	40	0
Cocolalla Sl	May	1	11	11	0	10	LMB:1, BC:8, BBH:8	S11	1	16

Appendix A. Continued.

Lake	Month	# days surv.	no. interviews	resident	non-res	Hours	Fish Type	Equipment	Harvest	Release
	Jun	1	3	3	0	5	SF:4	S3	4	LMB C/R
Darling	Aug	1	2	0	2	1	0	S2	0	0
Dawson	Jun	2	13	10	3	21	TM:1, LMB:1	S7, B11	35	0
	Jul	1	0	0	0	0	0	B4	0	0
Dennick	Jul	1	1	1	0	1	0	B3	0	0
Fernan	Jan	1	9	8	1	12.5	YP:22	S9	22	0
	Apr	1	11	7	4	43	YP:1	S11	1	0
	May	1	13	12	1	35	RBT:4, YP:11, LMB:2	S11, B2	17	0
	Jul	1	2	0	2	2	0	S2	0	0
Fernand	Mar	1	4	4	0	5	RBT:1, LMB:1	S4	1	1
Freeman	Jun	1	17	5	12	70	hRBT:3	S17	3	0
Gamblin	Jul	1	6	6	0	7	YP:8, SF:1	B6	9	0
Granite	Apr	1	0	0	0	0	0	0	0	0

Appendix A. Continued.

Lake	Month	# days surv.	no. interviews	resident	non-res	Hours	Fish Type	Equipment	Harvest	Release
Hauser	Jan	1	10	4	6	16	YP:54	S10	54	0
	Jul	1	4	4	0	4	0	S4	0	0
	Aug	1	2	0	2	3	CRP:60	B2	60	0
Hayden	Jan	1	4	4	0	2	0	S4	0	0
	Mar	1	1	1	0	7	0	S1	0	0
	Apr	1	13	11	2	26	CT:5	S13	5	0
Jewel	Apr	1	0	0	0	0	0	0	0	0
	May	3	21	21	0	29	RBT:3	S8, B13	3	C/R
	Jun	2	10	10	0	22	0	B10	0	C/R
	Sep	1	5	5	0	10	0	S1, B4	0	0
Kelso	Apr	2	13	13	0	23	RBT:17, BK:1	S13	18	0
	Jun	2	24	21	3	44	RBT:7	S24	7	0
	Jul	1	5	5	0	8	0	S5	0	hRBT:3

Appendix A. Continued.

Lake	Month	# days surv.	no. interviews	resident	non-res	Hours	Fish Type	Equipment	Harvest	Release
	Sep	1	4	3	1	14	RBT:5	S4	5	0
L.P. Slough	Apr	2	6	6	0	6	hRBT:7, PE:2	S6	9	0
	Jun	1	27	16	11	23	LMB:3, hRBT:8	S27	11	0
	Sep	1	1	1	0	1	hRBT:2, CRP:2	S1	4	0
Mirror	Jul	1	4	4	0	2	CT:3	S4	3	0
Moose	Jul	1	3	0	3	3	hRBT:4	S3	4	0
Pend Oreille	Jul	3	41	36	5	77	BLT:2, wRBT:4, KOK:14	S1, B40	14	6
	Aug	6	148	90	58	232	BLT:5, CT:3, LKT:8, KOK:46, WF:1	B107	63	0
Pend Oreille R	Aug	1	22	9	13	22	YP:20	S4, B18	20	0
Perkins	Jun	2	11	16	0	26	CRP:4, YP:1	B16	5	0
	Jul	1	0	0	0	0	0	0	0	0
	Aug	2	0	0	0	0	0	0	0	0
Priest	Jun	1	25	8	17	37	LKT:10	B25	10	0

Appendix A. Continued.

Lake	Month	# days surv.	no. interviews	resident	non-res	Hours	Fish Type	Equipment	Harvest	Release
	Jul	2	12	2	10	15	Y{:14, LKT:1	S8, B4	15	0
	Aug	2	45	27	18	72	LKT:32	B45	32	0
Upper Priest	Jul	2	9	3	6	13	0	B9	0	0
	Aug	2	18	8	10	14	CT:4, LKT:1	S11, B7	5	0
Queen	Jul	1	2	2	0	10	RBT:8	S2	0	0
Robinson	Jun	4	63	50	13	87	RBT:33, BG:1, BK:1	S45, B18	35	0
Roman Nose	Aug	1	4	4	0	10	RBT:4	S4	4	0
RLSP	Apr	2	18	18	0	32	RBT:23	S18	23	BK:1
	May	3	42	40	2	60	RBT:20, CT:1	S26, B16	42	LMB C/R
	Jun	2	43	39	4	66	RBT:6, BC:1	S27, B16	7	LMB C/R
	Jul	1	6	5	1	8	0	S6	0	0
	Sep	1	10	9	1	8	RBT:1, LMB:1, PE:8, PS:1	S8, B2	11	0
Little Round	Jun	1	4	4	0	36	RBT:12	B4	12	0

Appendix A. Continued.

Lake	Month	# days surv.	no. interviews	resident	non-res	Hours	Fish Type	Equipment	Harvest	Release
Sansouci	May	1	7	7	0	6	RBT:3	S7	3	0
	Jun	1	12	8	4	19	0	S12	0	0
Shepherd	Jul	1	4	4	0	5	0	S4	0	0
Sinclair	Jun	1	5	5	0	10	RBT:8	S5	8	0
Smith	Jun	5	81	67	14	111	RBT:29, LMB:10	S56, B55	39	0
	Jul	1	3	3	0	3	RBT:3	S3	3	0
Snow	Aug	2	15	9	6	20	CT:36	S5	36	0
Solomon	Jun	2	9	9	0	11	RBT:1	S7, B2	1	0
	Jul	1	0	0	0	0	0	0	0	0
	Aug	2	3	3	0	5	RBT:1	B3	1	0
Spirit	Apr	1	6	6	0	8	0	S6	0	0
	May	1	2	2	0	4	CT:1	S2	1	0
	Jun	1	51	36	15	142	LMB:19, YP:10, SF:10	S5, B46	19	20

Appendix A. Continued.

Lake	Month	# days surv.	no. interviews	resident	non-res	Hours	Fish Type	Equipment	Harvest	Release
Lower Twin	Apr	1	13	12	1	5.5	RBT:2	S1, B12	2	0
	May	3	12	12	0	22	RBT:2	S12	2	0
Upper Twin	Feb	1	15	14	1	19	PE:4, PS:1	S15	5	0
	Apr	1	18	18	0	57.5	RBT:8, BK:1, YP:1	S3, B15	10	LMB C/R
	May	1	3	3	0	3	0	S3	0	0

1997 ANNUAL PERFORMANCE REPORT

State of: Idaho — Program: Fisheries Management F-71-R-22

Project: I-Surveys and Inventories — Subproject: I-A Panhandle Region

Job No.: c — Title: Rivers and Streams Investigations

Contract Period: July 1, 1997 to June 30, 1998

ABSTRACT

Westslope cutthroat trout *Oncorhynchus clarki lewisi* densities estimated from snorkeling transects in the catch-and-release sections of the North Fork Coeur d'Alene, Little North Fork Coeur d'Alene, and St. Joe rivers were 1.19, 0, and 1.72 trout/100 m^2, respectively. In the harvest sections of the same rivers, densities were 0.37, 0.23, and 0.17 trout/100 m^2, respectively. The mean number of trout per transect in the catch-and-release section of the St. Joe River has declined for the past four years (1993-1997).

It was unclear where westslope cutthroat trout overwinter in the St. Joe River. No cutthroat trout were observed upstream from Prospector Creek during November through February. No trout were observed between Prospector Creek and North Fork St. Joe River. Although no trout were observed between the North Fork St. Joe River downstream to St. Joe City, visibility due to water clarity or floating ice prevented viewing the bottom of some of the deepest pools where trout could be overwintering.

Trout densities in the Little North Fork Clearwater River from Foehl Creek to Adair Creek estimated by snorkeling ranged between 0.34 and 1.65 trout/100 m^2. The trout population abundance estimated by electrofishing in the area from Adair Creek to Lost Lake Creek was 5.20 trout/100 m^2. Only one trout over 300 mm TL was captured, the remainder of the captured trout were under 250 mm TL. The highest number of bull trout *Salvelinus confluentus* captured by electrofishing in the sampled tributaries occurred in Lund Creek.

Trout densities estimated by electrofishing ranged between 9.6 and 42.3 trout/100 m^2 in sampled tributaries of the Pend Oreille Lake drainage. Bull trout densities ranged between 0 and 9.3 trout/100 m^2 per sampled reach and westslope cutthroat trout densities ranged between 0 and 86.2 trout/100 m^2.

Department personnel counted 527 bull trout redds in the Pend Oreille Lake drainage in 1997. The number of bull trout redds continued to decline in the Pend Oreille Lake drainage. A total of 22 redds were counted in the Upper Priest Lake drainage and 18 redds were counted in the upper St. Joe River drainage. A total of six bull trout redds were counted in the upper Little North Fork Clearwater River drainage.

Analysis of the Spokane River Drainage Angler Survey indicated all the groups of anglers (bait, fly, lure) agreed that we should allow trout harvest as well as catch-and-release fishing on both rivers. They did not want to increase harvest at the expense of catching fewer trout. They all agreed (with one exception, which was a draw) that current regulations allowed enough harvest. All groups released most of the trout they caught.

None of the angler groups kept a legal limit of trout very often. Catching a 'limit of trout' was not important to any of the groups. They all agreed that stocked water increased the opportunity to catch trout.

Four fishing regulation modeling simulations reflected what could happen to the population of cutthroat trout in the St. Joe River. These simulations suggested that a catch-and-release regulation would increase catch rates and the number of larger trout in the population, that size limits (e.g. ≥355 mm TL) can maintain a population, and that even a reduced bag limit with no size restrictions will cause a decline. As harvest opportunity increases more anglers may enter the fishery. More trout would be harvested resulting in a decrease in abundance and the size structure would shift toward smaller trout. Elimination of harvest opportunity would result in harvest oriented anglers leaving the fishery and catch-and-release oriented anglers entering the fishery.

James A. Davis
Regional Fisheries Biologist

Charles E. Corsi
Environmental Staff Biologist

Ned J. Horner
Regional Fisheries Manager

OBJECTIVES

1. Estimate trout densities in selected snorkeling transects in the Little North Fork Coeur d'Alene and North Fork Coeur d'Alene rivers, and the St. Joe River annually. Document trends with previously collected data.

2. Identify critical overwintering habitat for westslope cutthroat trout in the St. Joe River.

3. Assess trout species composition, distribution and abundance in selected reaches of the Little North Fork Clearwater River from the confluence with Foehl Creek upstream to the headwaters.

4. Assess annual exploitation rate and movement of trout using reward tags in the Little North Fork Clearwater River, Idaho.

5. Assess stream substrate composition and abundance in selected reaches of the Little North Fork Clearwater River.

6. Assess trout species composition, distribution, abundance and habitat parameters in the following tributaries of the Little North Fork Clearwater River: Lund, Little Lost Lake, Lost Lake, Rocket, and Rocky Run creeks.

7. Assess trout densities and distribution in tributaries to Pend Oreille Lake.

8. Assess the status of bull trout populations in Pend Oreille Lake, Upper Priest Lake, St. Joe River, and Little North Fork Clearwater River drainages based on abundance of bull trout redds in selected tributaries.

9. Perform an analysis of the responses of anglers to the Spokane River Drainage Angler Survey.

10. Model the effects in abundance and size structure of the St. Joe River cutthroat trout population to changes in harvest management.

11. Evaluate harvest of put-and-take rainbow trout, based on tag returns, from the Moyie and St. Maries rivers, and Big Creek (St. Joe River).

12. Evaluate the return-to-the-creel for put-and-take hatchery-reared domestic Kamloops rainbow trout in the St. Maries River and Big Creek (St. Joe River).

13. Evaluate the return-to-the-creel for put-and-take hatchery-reared Colorado River rainbow trout in the Moyie River.

METHODS

Large River Inventory Assessment

Trout Densities

Snorkeling-Biologists snorkeled previously established transects in the North Fork Coeur d'Alene River and Little North Fork Coeur d'Alene River (Lewynsky 1986) (Figure 1) and the St. Joe River (Rankel 1971) (Figure 2). There were 28, 13, and 35 transects surveyed in the North Fork Coeur d'Alene River, Little North Fork Coeur d'Alene River, and St. Joe River, respectively. The number of westslope cutthroat trout *Oncorhynchus clarki lewisi,* rainbow trout *O. mykiss,* and bull trout *Salvelinus confluentus* was recorded for each transect by species and length group, either greater than 300 mm or less than 300 mm. Mountain whitefish *Prosopium williamsoni* were counted as either adults or juveniles, with juveniles being less than 150 mm. Northern squawfish *Ptychocheilus oregonensis* and suckers *Catostomus spp.* were enumerated. Density estimates were calculated for westslope cutthroat trout, bull trout, and rainbow trout.

The length and width (m) of each transect was measured to determine the area (m^2) surveyed. Trout density was reported as fish/m^2, fish/100 m^2 or fish/ha.

Winter Habitat Assessment

We surveyed existing transects or newly established transects in the St. Joe River by snorkeling once per month between October 1997 and February 1998. Westslope cutthroat trout were identified by size group (75-150 mm, 150-225 mm, 225-300 mm, 300-375 mm and >375 mm total length) and enumerated. Adult whitefish were also enumerated.

Little North Fork Clearwater River Survey

The Little North Fork Clearwater River was divided into five sections (Figure 3). We snorkeled 35 systematically selected reaches in Sections 2, 3, 4, and 5. Study reaches were established at approximately 800 m intervals. Length and mean width of each reach was measured to calculate area of each reach. Depth measurements were made and percent substrate composition was visually estimated at ¼, ½, and ¾ of the distance across the wetted perimeter at each width measurement. Substrate categories were sand (<1 mm), gravel (1-16 mm), rubble/cobble (17-256 mm), boulder (>256 mm), and bedrock (Cummins 1962). Depth measurements were averaged to calculate mean depth.

Each reach was snorkeled to estimate number and length of each game fish species. Total number of game fish per reach was determined by snorkeling downstream or upstream depending on current velocity. Fish were identified by species and assigned to a length group: 0-75 mm, 76-150 mm, 151-226 mm, 227-300 mm, 301-375 mm, or >375 mm total length. Observations of mountain whitefish were recorded. Trout density was calculated as trout/100 m^2 for each study reach.

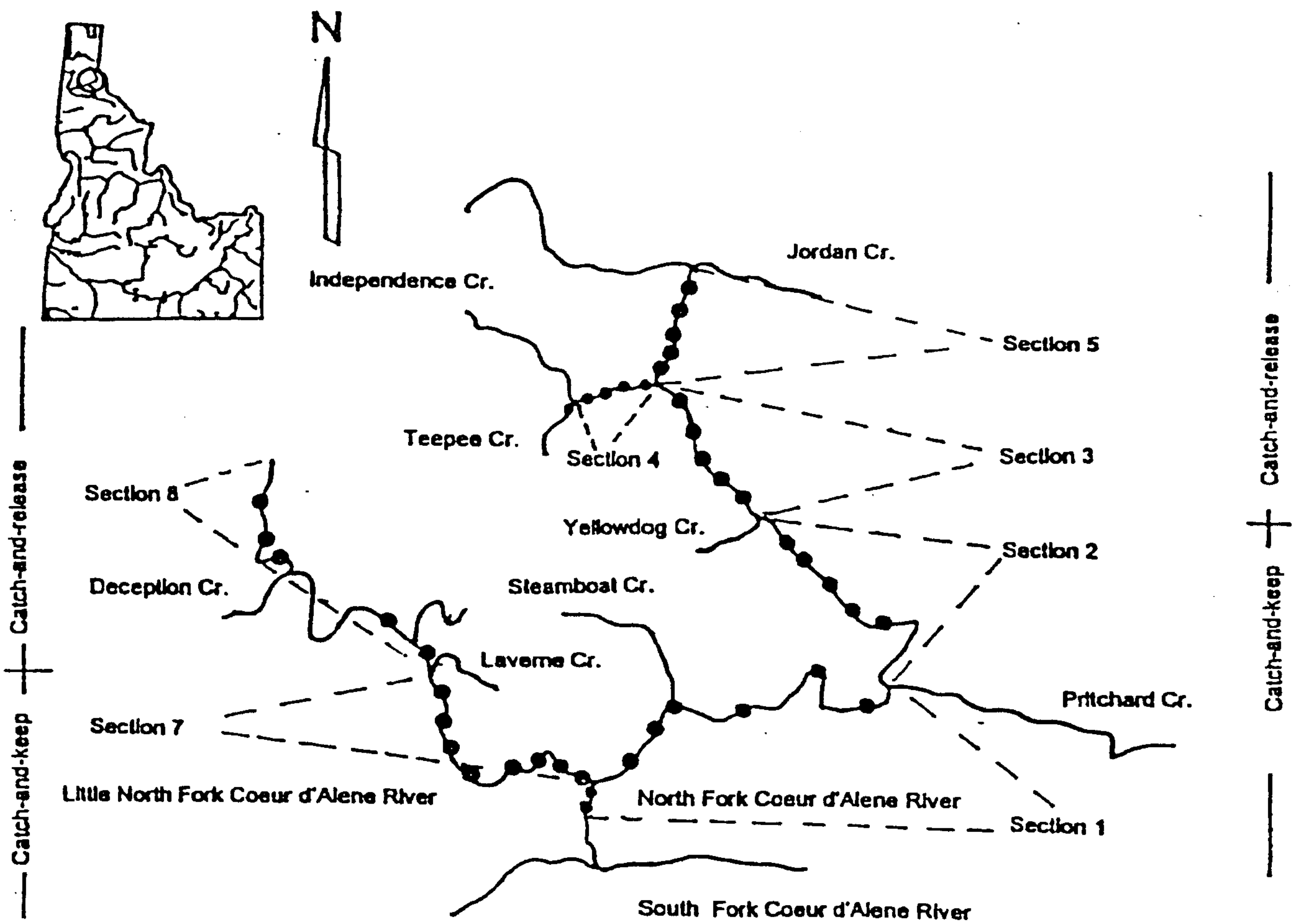


Figure 1. General locations of snorkeling transects in the North Fork and Little North Fork Coeur d'Alene rivers, Idaho.

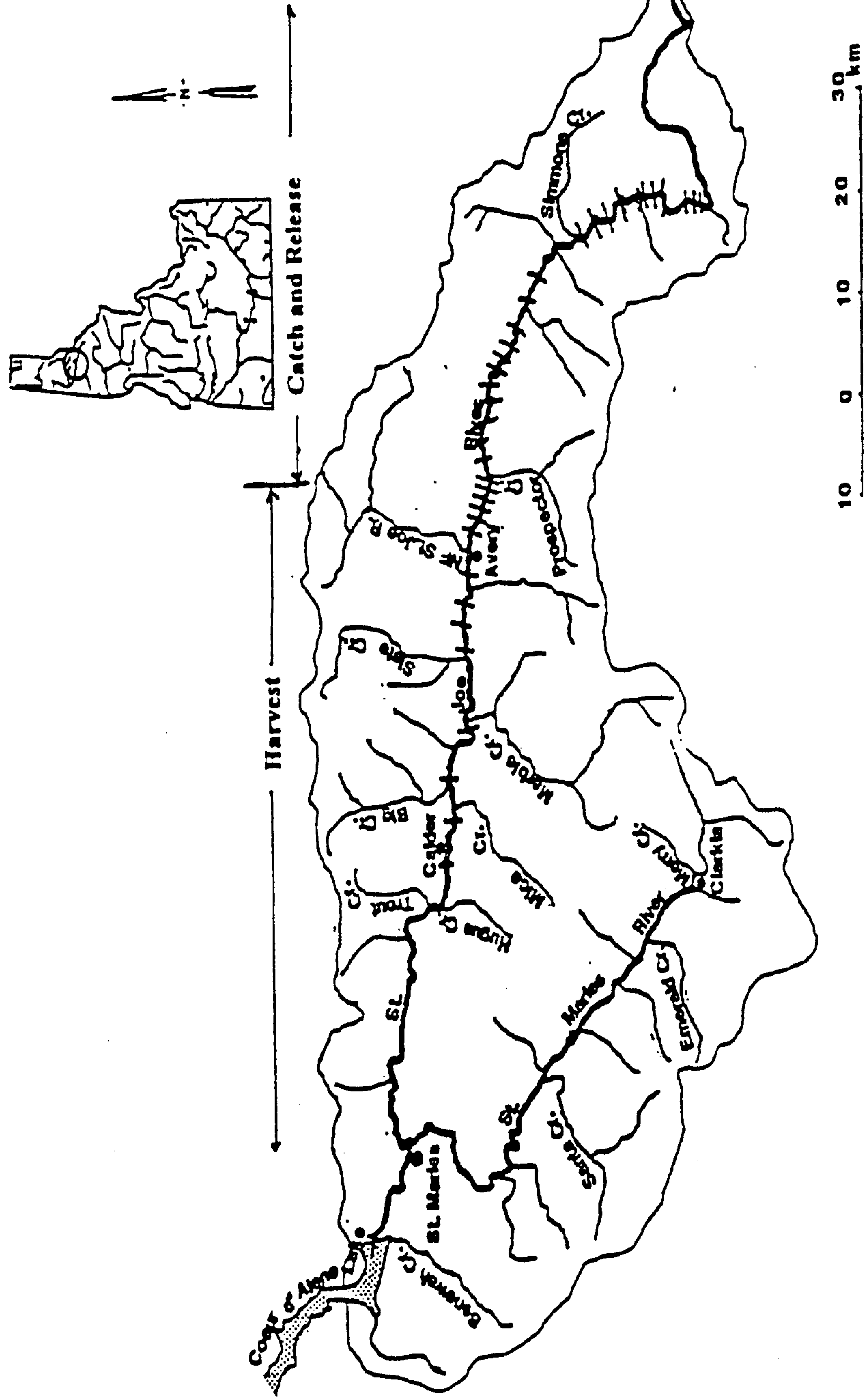


Figure 2. General location of snorkeling transects on the St. Joe River, Idaho.

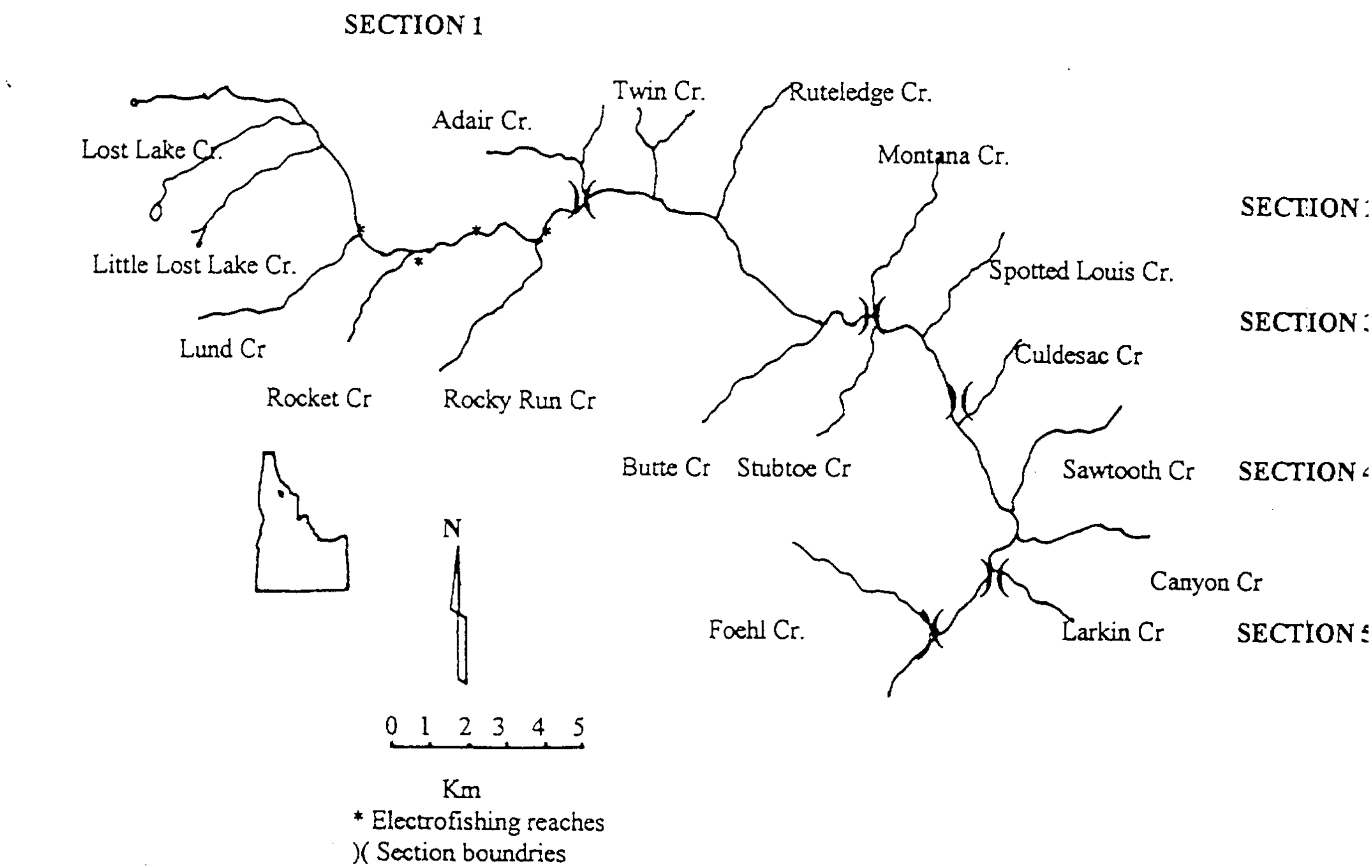


Figure 3. General location of survey sections and electrofishing reaches in the Little North Fork Clearwater River, Idaho, 1997.

Trout were also sampled by angling. Species and total length of each trout caught were recorded. All trout greater than 200 mm were tagged with a reward floy tag. Rewards for the return of tag numbers were either a hat, T-shirt, or $5. All returns were entered in a drawing for a $100.00 gift certificate from a local sporting goods store. Exploitation and movement based on tag returns will be assessed at the end of the 1998 fishing season.

In Section 1, four reaches were selected for population estimates (Figure 3). Length and mean width were measured and the area calculated for each reach. Trout were captured with the aid of a Coffelt BP-4 electrofisher. Population abundance for trout longer than 80 mm was estimated using the Petersen method (Ricker 1975). On the first pass, September 3-4, 1997, each fish was marked with a hole punch in the caudal fin. A second pass was conducted one week later. Captured trout were examined for a hole punch and unmarked trout were measured and recorded. Total length was measured and recorded for all captured trout. Trout density was calculated as trout/100 m^2. Five scale samples were collected from each 10-mm length class of captured cutthroat trout. Scales were read and ages determined.

Tributaries-Lund, Little Lost Lake, Lost Lake, and Rocky Run creeks, and the Little North Fork Clearwater River upstream from Lost Lake Creek, were surveyed using the IDFG Standard Stream methodology (Figure 3). Each tributary was divided into three sections: bottom, middle, and top. A minimum of one reach was surveyed in each section. Population estimates were attempted in each reach using the multiple removal methodology (Seber and LeCren 1967). Species and total length of each trout captured were recorded and the density (trout/100 m^2) was calculated. A different methodology was used in Rocket Creek. It was divided into three sections: bottom, middle, and top. Fish were sampled in two reaches of the bottom and middle sections. In three of these reaches, only one electrofishing pass was conducted. Captured trout were identified and measured (mm). The identified trout were totaled by species. In the fourth reach, we used the multiple pass method to estimate population abundance. The catch efficiency was calculated for the multiple pass as the percentage of the total population caught in the first pass. The total number of trout collected from each of the single pass reach was divided by this factor to estimate trout abundance for all reaches.

Small Stream Surveys

Trout Distribution and Abundance

A cooperative project was undertaken to assess salmonid abundance and distribution within the Pend Oreille Lake drainage, with emphasis on bull trout. This cooperative project was undertaken by personnel from the IDFG, Idaho Department of Health and Welfare - Division of Environmental Quality, Panhandle National Forests and Rocky Mountain Research Station. The project took place during August 11-15, 1997. Several streams were targeted for population and abundance estimates and distribution: East Fork Lightning Creek, Savage Creek, Char Creek, Porcupine Creek, Wellington Creek, Rattle Creek, Twin Creek, Trestle Creek, and West Fork Blue Creek (Figure 4). Lightning Creek was sampled August 18 and 22, 1997.

Each of these streams, with the exception of Lightning Creek, were divided into three sections: top, middle and bottom. Each section was divided into nine reaches. Three reaches per section were randomly

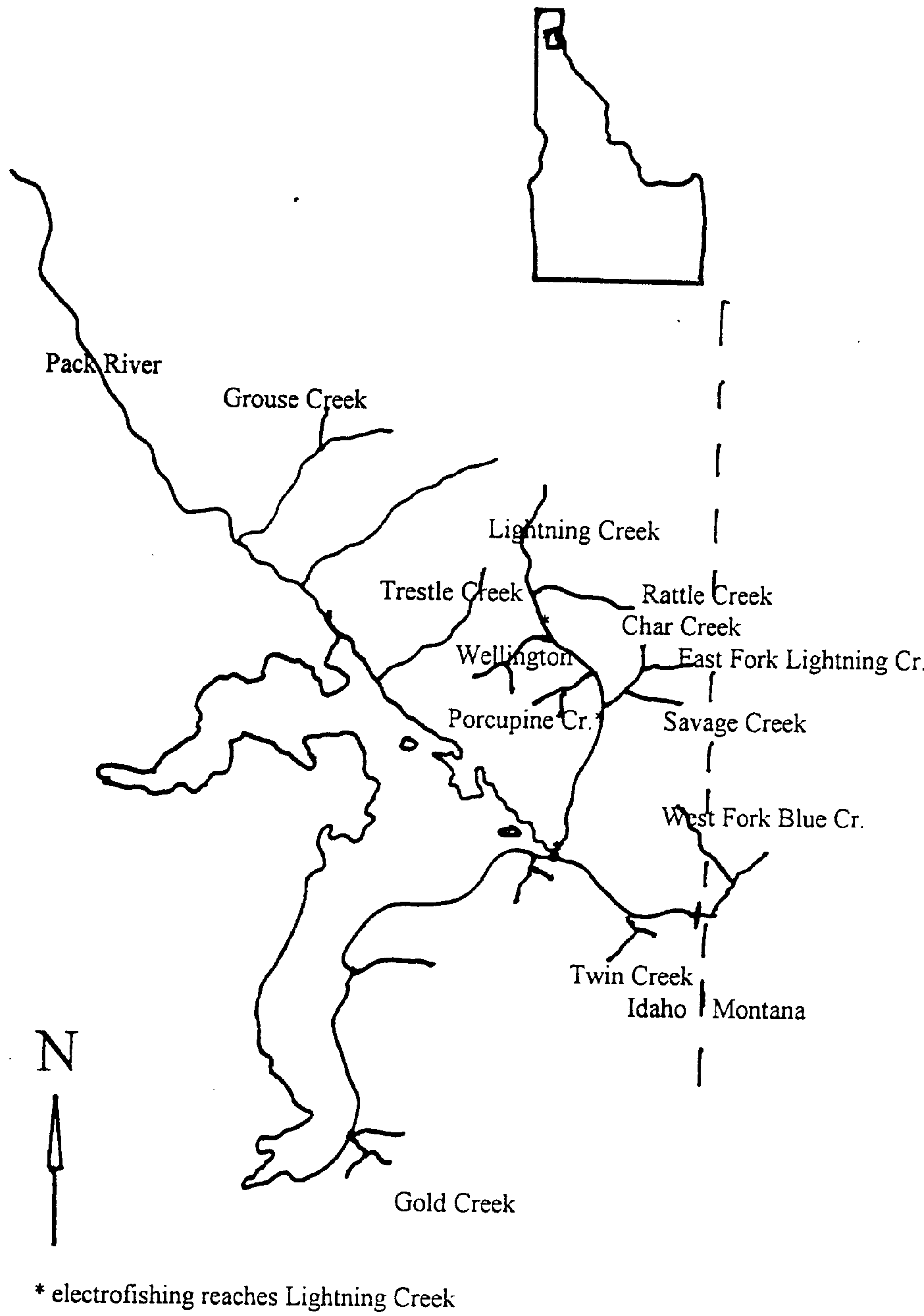


Figure 4. Map of the Pend Oreille Lake drainage, Idaho.

selected; nine sites per stream were surveyed. Each sampling site was 30 m long and bounded at the top and bottom by a riffle. Mean stream width was calculated from five width measurements.

Trout were captured using several different models of backpack electrofishers. A single pass was made through each sampling site to capture trout. All trout captured were identified to species and measured (mm TL). At least one site per stream was selected for a population estimate using multiple pass methodology.

Trout abundance data from the multiple pass sampling sites were pooled to form a linear regression equation (number of trout captured in the first pass vs population estimate) (Labon-Cervia and Utrilla 1993). This equation was used to estimate trout and bull trout abundance in the single pass sampling sites (trout <80 mm were not included in the estimates). The density of all trout were calculated for each site. The density of bull trout was also calculated, where possible.

The Petersen mark and recapture methodology was used to estimate trout abundance in Lightning Creek. Two sites were selected: one in Reach 2 and the other in Reach 3 (Figure 4). Densities were also calculated.

Fin clips were collected from up to 40 bull trout per stream for genetic analysis. Grouse and Gold creeks were also surveyed to collect bull trout genetic material. All fin samples were stored in ethanol.

Bull Trout Spawning Surveys

In 1997, bull trout redds were counted in selected tributaries based on previous surveys of the Pend Oreille Lake (Pratt 1984), Upper Priest Lake (Nelson et al. 1996), St. Joe River (Davis et al. 1996), and Little North Fork Clearwater River (Horner et al. F-71-R-19, in progress) drainages. In 1997, we surveyed the entire Upper Priest River from the mouth to the falls based on the number of redds counted in a new section of the Upper Priest River in 1996. We surveyed the Pend Oreille Lake drainage during October 1-17, 1997; the Upper Priest Lake drainage during October 6-10, 1997; and the St. Joe River drainage during September 22-25, 1997. Survey techniques and identification of bull trout redds followed methodology described by Pratt (1984). Inexperienced bull trout redd observers accompanied an experienced observer for a one-day training session. A one-tailed paired T-test was used to detect significance of differences between mean number of past redd counts and 1997 data. We estimated the number of adult bull trout spawners entering each drainage by applying 3.2 fish/redd (Fraley et al. 1981) to the total number of redds observed.

The Bureau of Land Management and the IDFG cooperated in a cost share project to conduct a bull trout redd survey in four Little North Fork Clearwater River tributaries: Lund, Little Lost Lake, Lost Lake, and Butte creeks, and the upper portion of the Little North Fork Clearwater River, between Lost Lake Creek and the headwaters. The Little North Fork Clearwater River drainage was surveyed during September 23-25, 1997. A new section was added on the Little North Fork Clearwater River between Lund Creek and Lost Lake Creek. The goal of the project was to assess adult bull trout spawning escapement.

Spokane River Drainage Regulation Assessment

Angler Survey

In 1996, the Panhandle Regional Fish Management team began a review of the current fish management of the Spokane River drainage. The goal of the project is to manage for wild native species, provide a diversity of fishing opportunities desired by anglers and, if possible, simplify fishing regulations within the drainage.

The first phase was to develop and distribute a questionnaire. The questionnaire was designed to assess angler attitudes on several topics including: catch-and-release and harvest fishing, the use of hatchery-reared trout, IDFG's ability to manage fish and fish habitat, and guided fishing trips (Fredericks et al. F-71-R-21, in progress). The first data analysis concentrated on summarizing angler responses by river section and by river (Fredericks et al. F-71-R-21, in progress). The second analysis concentrated on angler responses based on terminal tackle (bait, fly, lure). The analysis based on terminal tackle is discussed in this report.

Several key questions and responses selected from the survey questionnaire were tabulated. Section 1 questions (numbers 11-16) pertained to the catch-and-release and harvest management of the St. Joe River and Coeur d'Alene River fisheries (Appendices A, B, C, D, E, and F). Section 2 questions (5-7 and 9-13) pertained to angler attitudes toward releasing trout, catching a limit of trout, and fishing stocked waters (Appendices A, B, C, D, E, and F). Section 3 questions (2-8) pertained to changes in management of the St. Joe River and Coeur d'Alene River fisheries and the effects on the quantity of fishing effort (Appendices A, B, C, D, E, and F). We used these questions as indicators of how anglers felt about fishing management alternatives, and what effect changes in fishery management could have on angler distribution and effort in certain sections of both rivers (stop, decrease, same, or increase).

St. Joe River Regulation Modeling

The modeling investigated the effects different harvest regulations had on a theoretical population of cutthroat trout in the St. Joe River. The results of the modeling would help to identify the tradeoffs that would be necessary with the implementation of each of the different regulation scenarios in terms of fish abundance and size structure.

The MOCPOP 2.0 (Beamesder 1991) modeling program was used to simulate the effects of changes in harvest regulations on the westslope cutthroat trout population. This model requires several key elements to be provided: starting population abundance, potential reproduction (fecundity and age at maturity), recruitment, growth, mortality, and exploitation. In this report, exploitation was the only variable manipulated to simulate changes in harvest (Table 1). The other values were taken from the literature (fecundity) or from data collected on the St. Joe River (age/growth, mortality). The starting population abundance was arbitrarily set at 10,000 fish and recruitment was constant at 10,000 fish annually (unlike real fish populations).

We included two forms of exploitation: direct harvest and hooking mortality. Harvest exploitation (33%) was based on tag returns from westslope cutthroat trout over 355 mm in 1996 from the St. Joe River

Table 1. List of parameters used in the MOCPOP 2.0 harvest regulation simulations for the St. Joe River, Idaho, 1997.

	Parameter		Value
Reproduction	Age of female maturation		3
	Percent females in population		50
	Percent females spawning		
		Age 0-3	0
		Age 3-4	75
		Age >4	100
	Length/fecundity equation	Slope	2.26
		Intercept	0.002263
Recruitment	Constant		10,000
Growth	Age-length equation	L_∞	607
		K	0.15
		Tϕ	0.93
	Length-weight	β	2.93
		a	0.000015
Mortality	Egg to Age 1		Random - 0.6-0.8
	Age 1 to Age 8		0.49
Exploitation Simulation 1	Length- 100-150		0
	151-350		0.3
	351-607		0.3
Simulation 2	Length- 100-150		0.16
	151-350		0.16
	351-607		0.33
Simulation 3	Length- 100-150		0.16
	151-350		0.16
	351-607		0.66
Simulation 4	Length- 100-150		0.16
	151-350		0.66
	351-607		0.66

under the current fishing regulations of six trout, only one cutthroat that must be 355 mm or longer (Fredericks et al. F-71- R-21, in progress). The values for the second form of exploitation (hooking mortality) were taken from the literature. Hooking mortality from flies and lures was set at 3% (Schill et al. 1986). Hooking mortality from baited hooks was set at 16% (Schill 1992).

We evaluated four scenarios: catch-and-release (best case); six trout, only one cutthroat that must be 355 mm or longer (current fishing regulations); six trout, only two cutthroat that must be 355 mm or longer (worst case with a length limit); and a limit of two trout any length (wild trout regulation and the worst case). The last three simulations include the use of bait.

The catch-and-release simulation was used as a baseline to which the effects of liberalizing harvest regulations on cutthroat trout population abundance were measured. Simulation 2 modeled the current trout harvest regulations. Exploitation was set at 33% based on actual tag returns from the St. Joe River. The 33% exploitation rate should be considered conservative, in that it is based on the actual number of tag returns from harvested trout. Tagging studies indicate that anglers rarely return 100% of the tags from fish they catch, and that non-reporting rates may be as high as 50% or more (Nichols et al. 1991). Simulation 3 doubled the exploitation rate to 66% because anglers could harvest two cutthroat trout over 355 mm. We used this simulation as the "worst case" scenario for harvest regulations with a length limit. We used Simulation 4 as the overall "worst case" scenario under the regulation options currently available. Two trout any length could be harvested and exploitation was set at 66%. This harvest regulation is IDFG's simplified 'wild trout' regulation .

Hatchery Trout Evaluation

IDFG personnel tagged approximately 10% of the put-and-take Colorado River rainbow trout stocked in the Moyie River, Idaho (Figure 5) and 10% of the domestic Kamloops rainbow trout stocked in the St. Maries River and Big Creek (St. Joe River), Idaho (Figure 2). Trout were anesthetized with carbon dioxide and measured and tagged with numbered floy tags in the hatchery. Tagged and untagged trout were stocked once every one or two weeks.

A reward (either a T-shirt, hat, or $5) was offered for the return of the number from a tag of a harvested trout. All returns were entered into a drawing for a $100 gift certificate from a sporting goods store of their choice. All returned tags were totaled for each body of water and the percentage of trout returned to the creel was calculated.

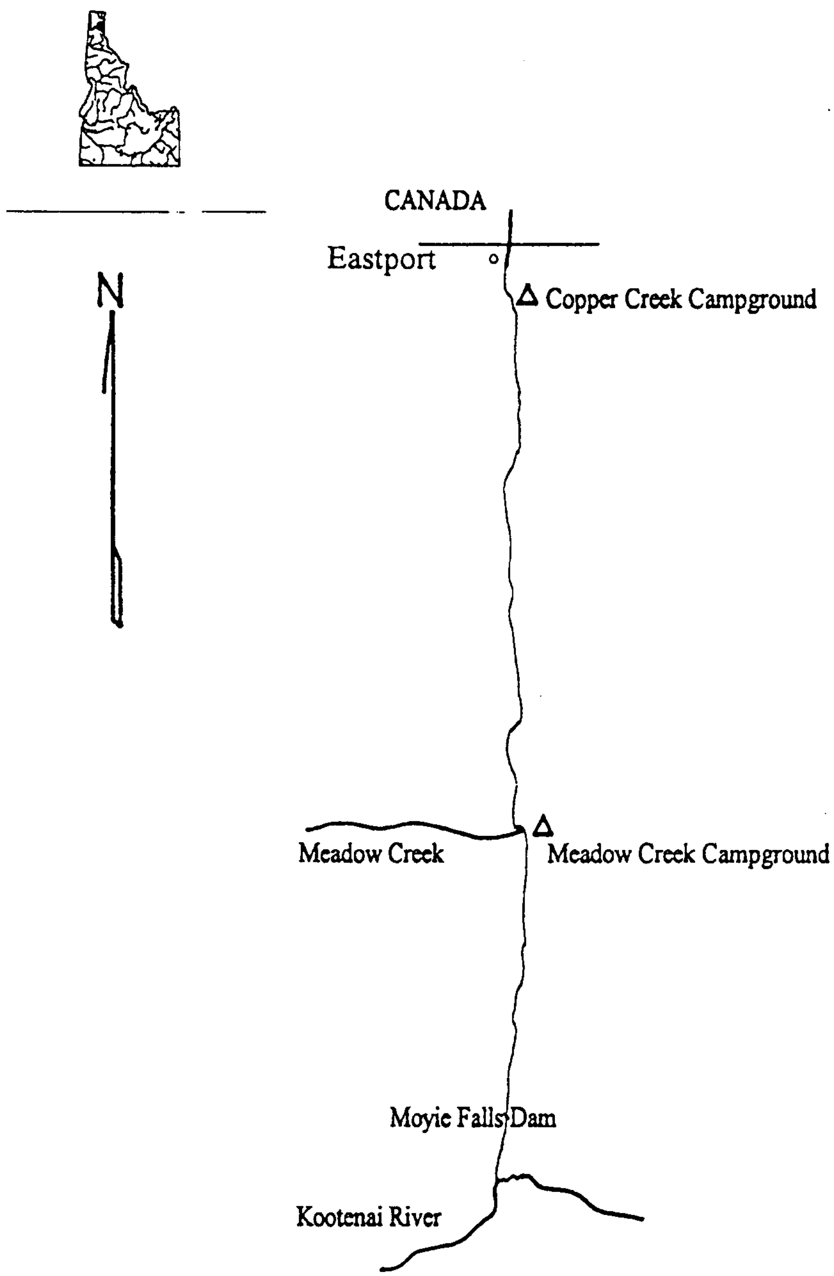


Figure 5. Map of the Moyie River, Idaho. Hatchery trout are stocked between Copper Creek Campground and Meadow Creek, 1997.

RESULTS

Large River Inventory Assessment

Cutthroat Trout Densities

North Fork Coeur d'Alene River

Snorkeling-The estimated density of westslope cutthroat trout was 119 fish/ha in the catch-and-release section and 37 fish/ha in the harvest section of the North Fork Coeur d'Alene River (Table 2). Summaries of fish observed and fish densities per transect are displayed in Appendices G and H. The density of trout larger than 300 mm TL was higher in the catch-and-release section (13 fish/ha) than in the catch-and-keep section (6 fish/ha), where a one cutthroat trout, 350 mm minimum size regulation was in effect (Figure 6).

Little North Fork Coeur d'Alene River

Snorkeling-The estimated density of westslope cutthroat trout was 0 fish/ha in the catch-and-release section and 23 fish/ha in the catch-and-keep section, respectively (Table 2). No cutthroat trout larger than 300 mm were observed in the Little North Fork Coeur d'Alene River (Figure 6). Appendix I displays the number of fish observed and the density per transect.

St. Joe River

Snorkeling-Estimated densities of westslope cutthroat trout were 172 fish/ha and 17 fish/ha in the catch-and-release and the catch-and-keep sections of the St. Joe River, respectively (Table 2). The density of cutthroat trout greater than 300 mm was 15 fish/ha and 1 fish/ha in the catch-and-release and the catch-and-keep sections of the St. Joe River, respectively (Figure 6). A summary of fish observed and estimated fish densities for each transect are displayed in Appendices J and K.

Winter Habitat Assessment

In October, we snorkeled 18 transects in the St. Joe River from Calder, Idaho upstream to Red Ives Creek. We observed westslope cutthroat trout in 10 transects (Table 3). Trout were observed only in pools with relatively low water velocities or with areas of low velocities created by large rocks or meanders. Cutthroat trout were not observed in transects classified as run/glides or pools with relatively high water velocities. Seventy percent of the cutthroat trout observed were in the 225-300 mm length group and 23% in the 300 mm and longer length group. We counted a total of 303 whitefish and 83% were located in the Prospector Creek hole.

Table 2. Summary of westslope cutthroat trout densities counted in snorkeling transects in the North Fork Coeur d'Alene, Little North Fork Coeur d'Alene and the St. Joe rivers, Idaho, August 1997.

North Fork Coeur d'Alene River

Section	Fish Size	Cutthroat counted	Transect length (km)	Number counted/ km	Area (ha)	No. counted/ ha
Catch-and-keep	≤ 300 mm	183	1.3	136	5.0	37
	> 300 mm	2	1.3	1.5	5.0	0.4
				137.5		37.4
Catch-and-release	≤ 300 mm	260	1.2	210	2.3	113
	> 300 mm	16	1.2	13	2.3	6
				223		119

Little North Fork Coeur d'Alene River

	Fish Size	Cutthroat counted	Transect length (km)	Number counted/ km	Area (ha)	No. counted/ ha
Catch-and-keep	≤ 300 mm	28	0.6	47	1.2	23
	> 300 mm	0	0.6	0	1.2	0
				47		23
Catch-and-release	≤ 300 mm	0	0.2	0	0.40	0
	> 300 mm	0	0.2	0	0.40	0
				0		0

Table 2. Continued.

St. Joe River

Section	Fish Size	Cutthroat counted	Transect length (km)	Number counted/ km	Area (ha)	No. counted/ ha
Catch-and-keep	$\leq$ 300 mm	98	1.6	60.0	6.1	16.0
	> 300 mm	3	1.6	1.8	6.1	0.5
				61.8		16.5
Catch-and-release	$\leq$ 300 mm	628	1.8	342.0	4.0	157
	> 300 mm	61	1.8	33.2	4.0	15
				375.2		172

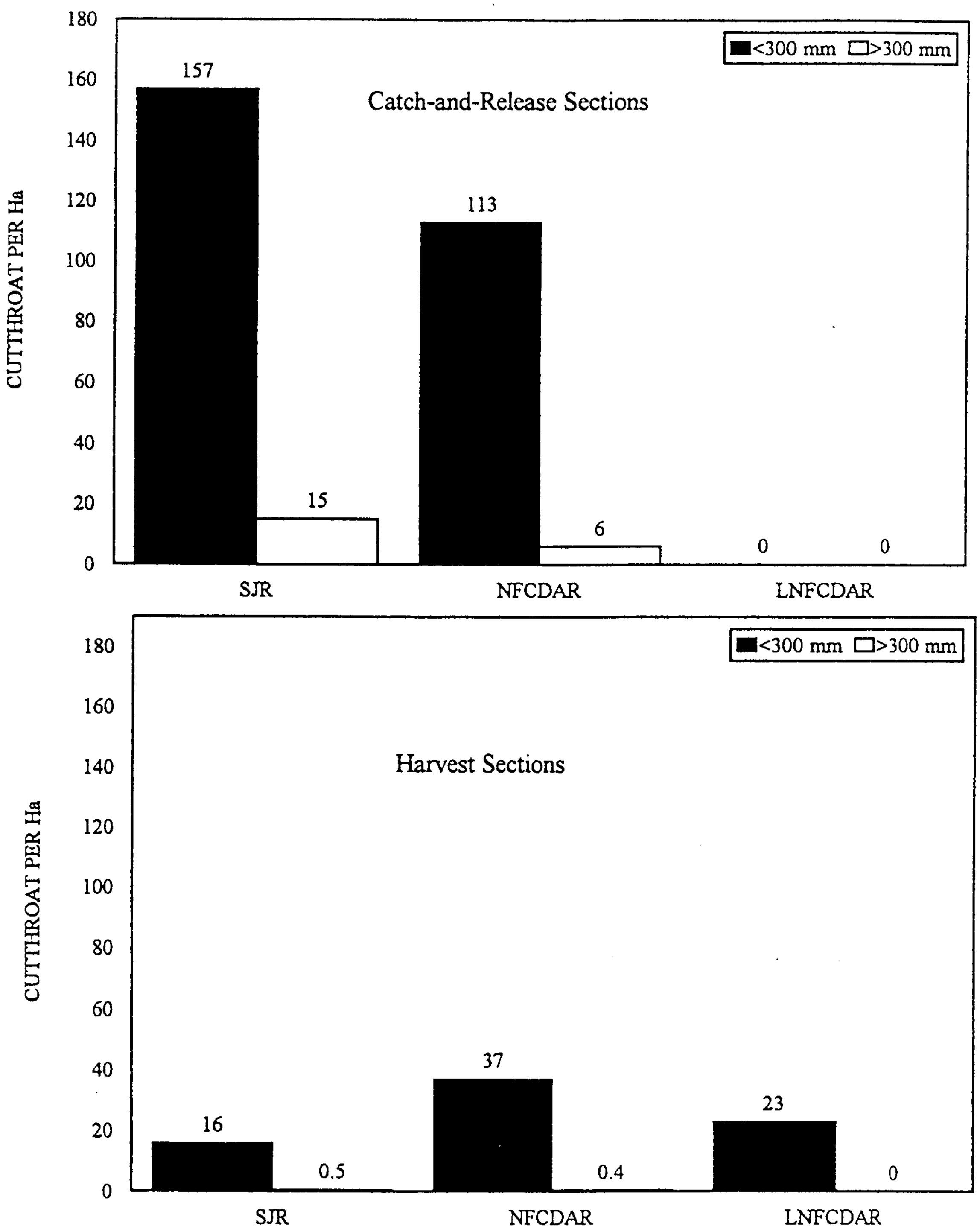


Figure 6. Density of westslope cutthroat trout per hectare observed by snorkeling classified as either greater than 300 mm or less than 300 mm in the catch-and-release and harvest sections of the St. Joe River, North Fork Coeur d'Alene, and Little North Fork Coeur d'Alene rivers, Idaho 1997.

Table 3. Number of westslope cutthroat trout observed by snorkeling in the St. Joe River, Idaho, during August, October, November, and December 1997.

Transect	Habitat type	Number of westslope cutthroat trout observed				
		August	October	November	December	February
St. Joe Lodge	Pool	--	--	0	--	--
Calder 29	Pool	1	0	0	0	0
30	Pool	6	3	Frozen	Frozen	0
31	Pool	2	0	Frozen	Frozen	0
32	Pool	0	5	0	--	--
33	Run/glide	0	--	--	--	--
Slate Creek	Pool	--	50	Frozen	0	0
Avery Ranger Station	Pool	--	--	0	--	--
34	Pool	6	0	0	--	--
Avery 35	Run/glide	45	0	--	--	--
1	Run/glide	0	0	--	--	--
2	Pool	13	0	Frozen	0	0
3	Pool	3	--	--	--	--
4	Pool	3	--	--	--	--
5	Pool	11	--	--	--	--
6	Pool	2	1	Frozen	Frozen	0
7	Run/glide	4	0	--	--	--
Prospector Cr. 8	Pool	16	210	Frozen	Frozen	0
9	Pool	39	--	--	--	--
10	Run/glide	39	--	--	--	--
11	Run/glide	9	--	--	--	--
12	Pool	37	62	Frozen	0	0
13	Run/glide	24	--	--	--	--

Table 3. Continued.

Transect		Habitat type	Number of westslope cutthroat trout observed				
			August	October	November	December	February
	14	Pool	16	78	0	--	--
	15	Run/glide	49	--	--	--	--
	16	Pool	49	--	--	--	--
	17	Pool	125	--	--	--	--
Gold Cr.	18	Pool	47	26	0	--	0
	19	Pool	37	1	--	--	--
	20	Pocket water	19	--	--	--	--
	21	Pool	55	47	0	--	--
Red Ives Cr.	22	Pool	55	80	0	--	--
	23	Run/glide	15	--	--	--	--
	24	Run/glide	6	--	--	--	--
	25	Pool	9	--	--	--	--
	26	Run/glide	13	--	--	--	--
	27	Pool	12	--	--	--	--
	28	Pool	13	--	--	--	--

In November, we surveyed four transects upstream from Prospector Creek and five transects downstream from Avery, Idaho. No cutthroat trout were observed (Table 3). However, several transects that contained cutthroat trout in October were frozen and could not be surveyed (Table 3). Transects classified as a run/glide were not surveyed.

In December, no cutthroat trout were observed in the four transects we surveyed (Table 3). Several key transects, still frozen, could not be surveyed. Frazzle ice restricted visibility in the free flowing transects.

Ice prevented us from surveying transects in January. In February, we snorkeled several transects between Fall Creek and Gold Creek (Table 3). We did not see any large groups of trout in the transects surveyed. However, poor visibility in pools deeper than 4 m prevented observation of the bottom where cutthroat trout may have been located.

Little North Fork Clearwater River Survey

Snorkeling-IDFG personnel snorkeled 35 stream reaches in the Little North Fork Clearwater River: 13 in Section 2, nine in Section 3, seven in Section 4, and six in Section 5. Game fish observed while snorkeling included westslope cutthroat, rainbow, bull trout, and mountain whitefish. Sculpins *Cottus spp.* and tailed frogs *Ascaphus truei* were also observed. Trout density per study reach ranged from 0 to 5.01 trout/100 m^2 (Table 4). Estimated trout density of the total area surveyed was 0.92 trout/100 m^2. Section 3 had the highest total estimated density of 1.66 trout/100 m^2 and Section 5 had the lowest with 0.35 trout/100 m^2 (Table 5). Section 2 and Section 5 had the highest number of cutthroat trout over 300 mm. The highest number of cutthroat trout in the 226-300 mm range observed was in Section 5 (Figure 7).

Ninety-nine percent of the rainbow trout observed were less than 300 mm. Sixty-two percent of the rainbow were observed in Section 3 (Figure 7).

Angling-In Sections 2, 3, 4, and 5, 205 trout were captured by angling: 120 westslope cutthroat trout, 73 rainbow trout, and 12 cutthroat x rainbow hybrid trout. Seventy-eight percent of the cutthroat trout were caught in Sections 3 and 5 (Figure 8). Seventy-seven percent of the rainbow trout were caught in Section 3. No bull trout were captured by angling. Trout captured by angling ranged from 105 mm to 435 mm (Figure 9). Trout in the 195-250 mm length group dominated the catch. The longest westslope cutthroat trout caught was 435 mm. The longest rainbow trout caught was 305 mm. Twenty-eight percent of the trout caught were greater than 300 mm and 5% of the trout caught were greater than 400 mm.

Seventy-one westslope cutthroat trout, 19 rainbow trout, and 4 hybrid trout captured by angling were floy tagged. Only three tags were returned in 1997 and these tags came from the same area where the fish were tagged. Because the tags were not put out until the last week in August 1997, we did not calculate an estimate of annual exploitation. However, an exploitation rate will be calculated at the end of the 1998 fishing season.

Electrofishing-Estimates of trout abundance were attempted in four reaches in Section 1, three were completed. High water prevented completion of an estimate in Reach 3. The trout population estimates in Reach 1 and 2 could not be calculated because there were less than four recaptures. The population estimate

Table 4. Number and density of trout, by reach, observed while snorkeling in the Little North Fork Clearwater River, Idaho, August 1997. (P=Pool, R/G=Run/Glide, PW=Pocketwater).

Section	Reach	Habitat type	Length (m)	Mean width (m)	Area (m^2)	Cutthroat trout		Rainbow trout		Bull trout		Total whitefish	Total trout	Trout /100 m^2
						<300 mm	>300 mm	<300 mm	>300 mm	<300 mm	>300 mm			
2	1	R/G	48	17.0	816	1	0	0	0	0	0	0	1	0.12
	2	P	30	15.5	465	2	1	0	0	0	0	0	3	0.65
	3	R/G	51	15.5	791	5	0	0	0	0	0	0	5	0.63
	4	P	44	10.7	471	1	0	3	0	0	0	1	4	0.85
	5	P	48	8.7	418	0	1	5	0	0	0	5	6	1.44
	6	R/G	30	9.7	291	0	0	0	0	0	0	0	0	0
	7	P	25	11.0	275	0	3	0	0	0	0	5	3	1.09
	8	P	25	11.7	293	2	3	3	0	0	0	5	8	2.73
	9	P	20	8.7	174	0	0	0	0	0	0	0	0	0
	10	P	33	8.7	287	0	0	0	0	0	0	0	0	0
	11	P	23	6.7	154	0	0	2	0	0	0	0	2	1.30
	12	R/G	18	8.0	144	0	1	2	0	0	0	0	3	2.08
	13	P	13	7.7	100	0	0	5	0	0	0	0	5	5.00
3	1	P	27	17.7	478	7	1	10	0	0	0	15	18	3.77
	2	PW	50	17.7	887	3	0	8	0	0	1	2	12	1.35
	3	P	34	14	476	3	1	8	0	0	0	5	12	2.52
	4	P	50	25	1,250	2	0	6	0	0	0	1	8	0.64

Table 4. Continued.

Section	Reach	Habitat type	Length (m)	Mean width (m)	Area (m^2)	Cutthroat trout		Rainbow trout		Bull trout		Total whitefish	Total trout	Trout /100 m^2
						<300 mm	>300 mm	<300 mm	>300 mm	<300 mm	>300 mm			
	5	P	28	12.3	344	3	1	11	0	0	0	4	15	4.36
	6	P	31	13.7	425	1	0	10	0	0	0	5	11	2.59
	7	PW	50	21.3	1,065	0	0	2	0	0	0	0	2	0.19
	8	P	78	21.3	1,661	5	1	22	0	0	0	5	28	1.69
	9	P	32	15.1	483	2	2	7	0	0	0	4	11	2.28
4	1	P	35	17.4	609	2	0	0	0	0	0	2	2	0.33
	2	R/G	45	16.3	734	4	0	4	0	0	0	2	8	1.09
	3	P	30	18.3	549	7	3	0	0	0	0	11	10	1.82
	4	P	66	14.7	970	2	0	3	0	0	1	0	6	0.62
	5	P	35	17.2	602	4	1	9	0	0	0	7	14	2.33
	6	R/G	54	15.5	837	1	0	3	0	0	0	0	4	0.48
	7	P	32	12.8	410	1	2	3	0	0	0	8	6	1.46
5	1	P	70	18	1,260	2	0	1	0	0	0	12	3	0.24
	2	P	45	15.3	689	1	1	0	1	0	0	3	3	0.44
	3	PW	40	14.6	584	0	2	4	0	0	0	0	6	1.03
	4	R/G	84	50	4,200	2	0	0	0	0	0	8	2	0.05
	5	P	78	27.5	2,145	4	6	0	0	0	0	83	10	0.47
	6	P	29	36.4	1,056	3	3	4	1	0	0	8	10	0.95
Total	35		--	--	26,393	70	33	135	2	0	2	201	241	0.92

Table 5. Total number and density of trout by section, observed by snorkeling, in the Little North Fork Clearwater River, Idaho, August 1997.

Section	Number of reaches	Area (m^2)	Total cutthroat	Total rainbow	Total bull trout	Total trout	Trout/100 m^2
2	13	4,679	20	20	0	40	0.86
3	9	7,069	32	84	1	117	1.66
4	7	4,711	27	22	1	250	1.06
5	6	9,934	24	11	0	34	0.35
Total	35	26,393	103	137	2	242	0.92

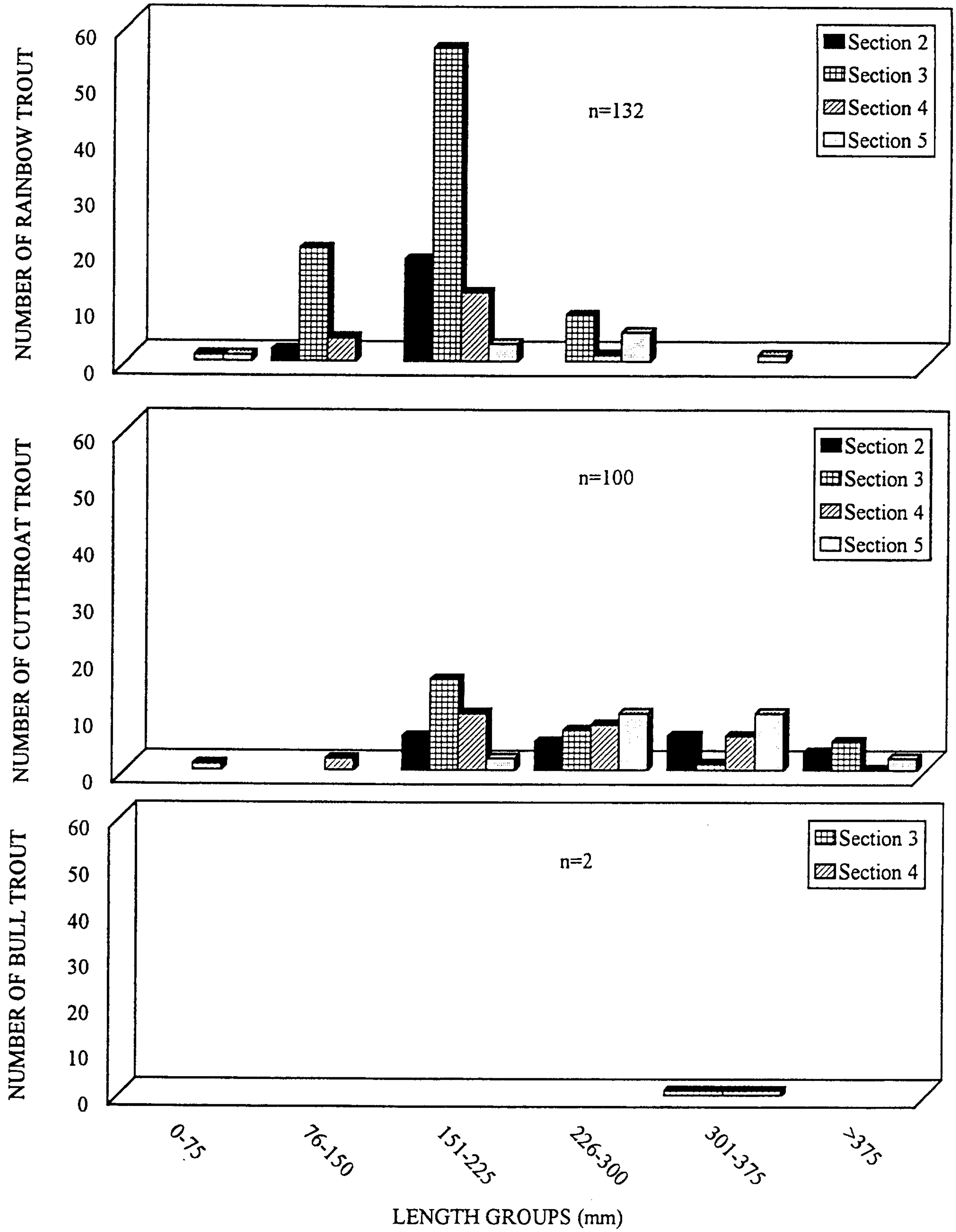


Figure 7. Length groups of trout observed by snorkeling selected reaches in the Little North Fork Clearwater River, Idaho, August 1997.

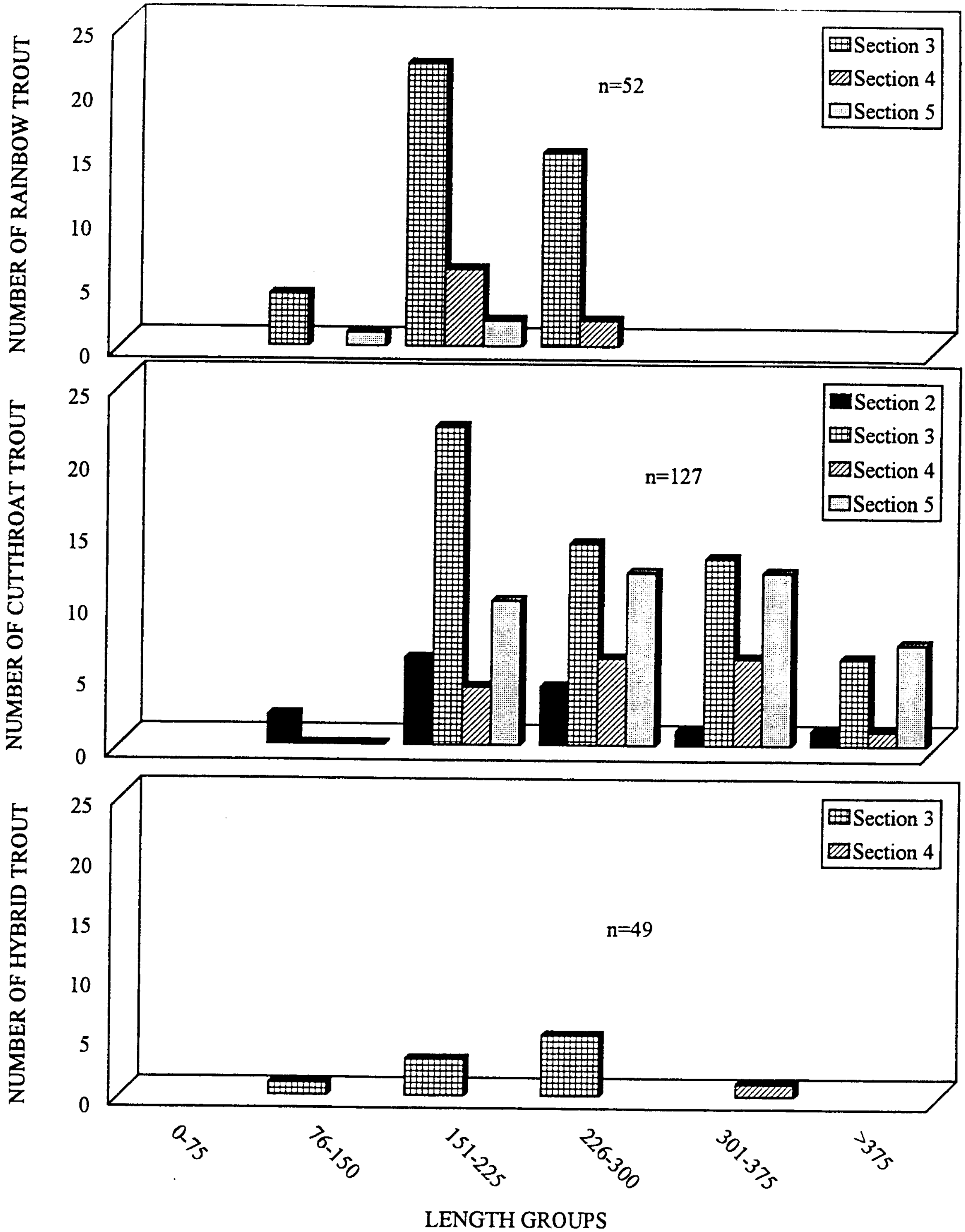


Figure 8. Length groups of trout caught by angling from Section 2-5 in the Little North Fork Clearwater River, Idaho, August 1997.

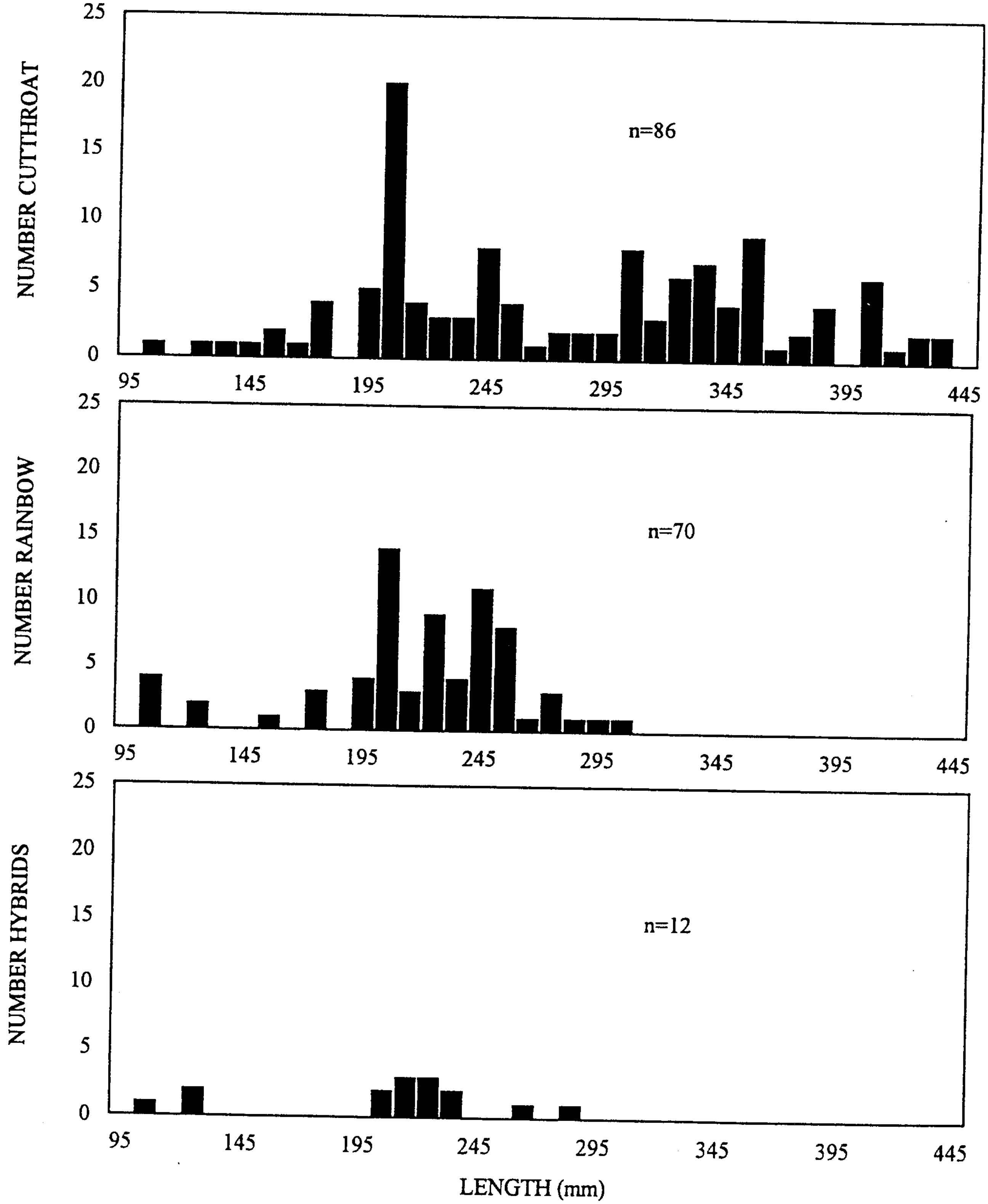


Figure 9. Length frequency of trout captured by angling from Section 2-5 in the Little North Fork Clearwater River, Idaho, August 1997.

in Reach 4 was 141 ± 68. The confidence interval for Reach 4 was 45% (Table 6). Combining the mark and recapture data from Reaches 1, 2 and 4 gave an estimated population total of 1,040 ± 463 for the study reaches. Trout density in Reach 4 was 2.6 trout/100 m^2 (Table 6). A trout density of 520 trout/ha (456 trout/km) was estimated in the combined reaches of Section 1.

Thirty-three percent of the trout captured were hybrid trout, 29% were bull trout, 22% were rainbow trout, and 15% were cutthroat trout. Only three trout were longer than 260 mm (two bull trout and one hybrid trout). The remainder of trout captured ranged from 70 mm to 260 mm (Figure 10).

There were three age groups of trout captured and aged from Section 1 (Figure 11). Two-year-old trout were the most abundant age group. Length ranges of aged trout captured indicate some overlap in age groups (Table 7).

Habitat-Stream habitat was surveyed and classified in 35 stream reaches. Twenty-five reaches were classified as pools, seven as run/glides, and three as pocket water (Table 8). Mean depth of pool reaches ranged from 0.3 m to 1.3 m (Table 8).

Substrate was dominated by rubble and boulder sized particles (Table 8). Two reaches in Section 2 had more than 19% sand. All four reaches with over 25% gravel were located in Section 2. Percentage of sand and gravel was generally less than 10% in Sections 3, 4 and 5 (Table 8).

Tributaries

Population Abundance-Population density estimates in the tributary study reaches ranged from 0 to 9.0 trout/100 m^2 (Table 9). The highest estimate was from Rocky Run Creek. Population estimates for Rocket Creek in the three single pass study reaches were 6, 6, and 6; the catch efficiency applied to the single passes was 70%.

Trout species composition was dominated by cutthroat trout (Figures 12-13). Bull trout were most abundant in Lund Creek where nine were found (Figure 13). One bull trout was also found in Little Lost Lake Creek and another in the Little North Fork Clearwater River upstream from Lost Lake Creek.

Cutthroat trout length range for all the tributaries combined was 60-220 mm and bull trout lengths ranged from 60-260 mm (Figures 12-13). No rainbow trout were collected in these tributaries. However, several trout classified by technicians as cutthroat x rainbow hybrids were captured. These fish were combined with the cutthroat for population estimates and length frequencies.

Habitat-Trout habitat types in the tributary study reaches were classified as pool, riffle, run/glide, or pocket water. Many of the study reaches had a combination of habitat types (Table 10). Percentage of total pools, riffles and run/glides for all the study reaches was 31% for each habitat type (Table 10). Seven percent of the habitat was classified as pocket water. Mean depths were less than 0.3 m.

Table 6. Estimated population abundance, by electrofishing using the Petersen mark and recapture methodology, for selected study reaches in Section 1 of the Little North Fork Clearwater River, Idaho, September 1997.

Section-reach	Length (m)	Mean width (m)	Area (m^2)	Number of fish marked (M)	Number of fish caught (C)	Number of fish recaptured (R)	Estimated population (^N)	Confidence interval (CI)	Density		
									Trout/100 m^2	Trout/ha	Trout/km
1-1	618	10.8	6,674	39	37	2	--	--	--	--	--
1-2	840	8.5	3,140	49	49	3	--	--	--	--	--
1-3[1]	410	9.7	3,977	13	--	--	--	--	--	--	--
1-4	820	6.7	5,494	32	44	10	141	±68	2.6	260	172
Total[2]	2,278	8.9	20,274	120	130	15	1,040	±463	5.1	520	456

[1]Recapture pass was not done due to high water.
[2]Total does not include section-reach 1-3.

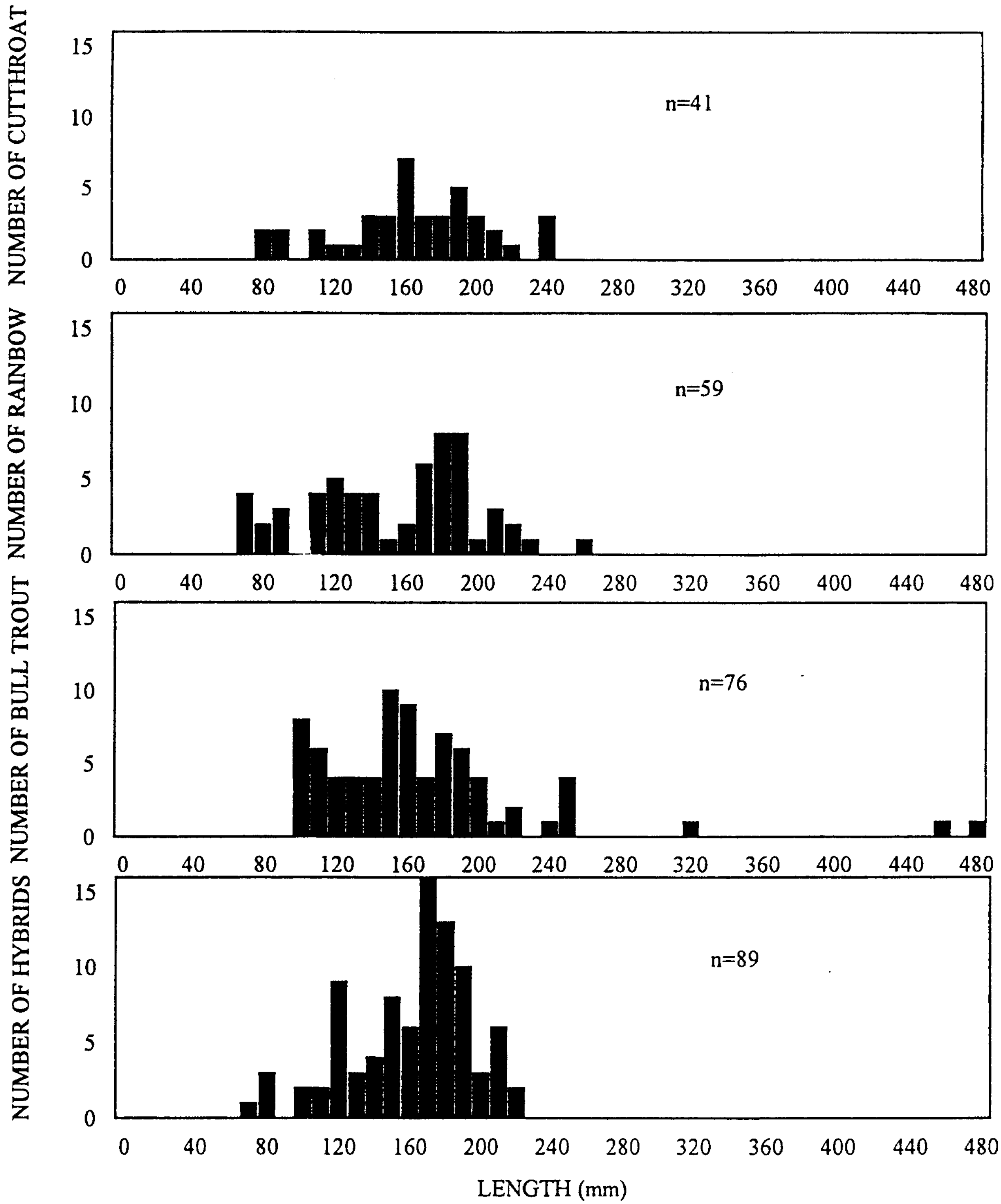


Figure 10. Length frequency of trout captured by electrofishing in Section 1 of the Little North Fork Clearwater River, Idaho, August 1997.

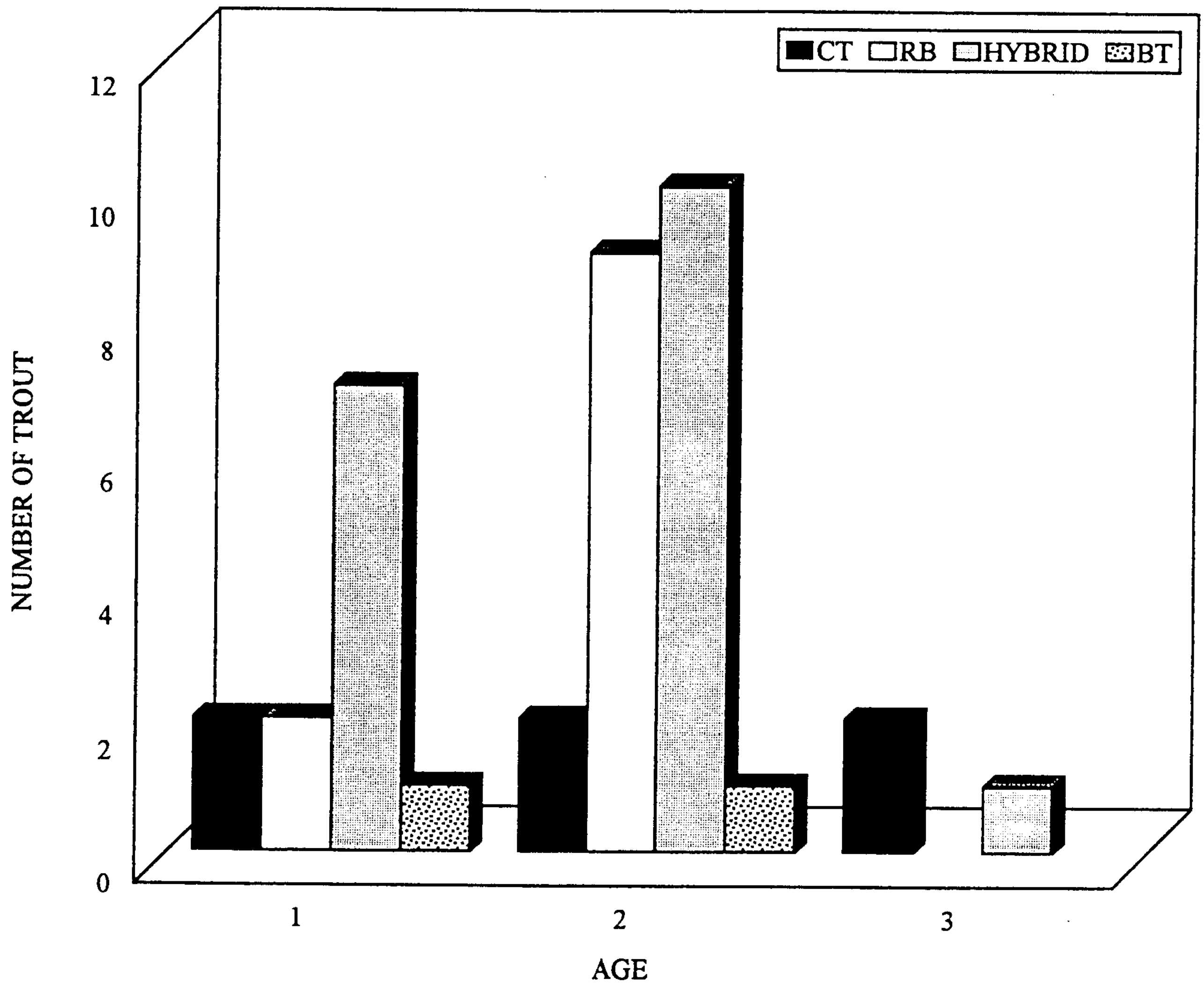


Figure 11. Age frequency of trout captured by electrofishing and aged from scales from Section 1 in the Little North Fork Clearwater River, Idaho, August 1997.

Table 7. Summary of aged trout captured by electrofishing Section 1 of the Little North Fork Clearwater River, Idaho, 1997.

Species	Age 1		Age 2		Age 3	
	Number	Length range	Number	Length range	Number	Length range
Cutthroat	3	122-166mm	2	159-244mm	2	208-248mm
Rainbow	2	79-142mm	9	161-209mm	--	--
Bull Trout	1	164mm	1	225mm	--	--
CT x RB	7	126-178mm	8	141-215mm	1	320mm

Table 8. Habitat classification and substrate composition for each reach surveyed in Section 2-5 of the Little North Fork Clearwater River, Idaho, 1997.

						Percent substrate composition				
Section	Reach	Habitat	Length (m)	Mean width (m)	Mean depth (m)	Sand	Gravel	Rubble	Boulder	Bedrock
2	1	Run/glide	48	17.0	0.5	1.1	3.9	81.7	13.9	
	2	Pool	30	15.5	0.9	1.7	4.4	83.3	10.6	
	3	Run/glide	51	15.5	0.5		6.1	88.3	5.6	
	4	Pool	44	10.7	0.7		1.7	90	8.3	
	5	Pool	48	8.7	0.8	1.7	3.9	84.4	11.1	
	6	Run/glide	30	9.7	0.5		7.8	71.7	20.6	
	7	Pool	25	11.0	0.6	0.6	8.9	51.7	32.2	
	8	Pool	25	11.7	0.8	22.2	48.9	28.9		
	9	Pool	20	8.7	0.5	6.7	67.8	21.7	2.8	
	10	Pool	33	9.3	0.6		3.3	32.8	20.6	44.4
	11	Pool	23	6.7	0.5	19.4	37.8	9.4		
	12	Run/glide	18	8.0	0.4	8.9	61.7	29.4		
	13	Pool	13	7.7	0.8	5.0	27.1	45.3	23.2	
3	1	Pool	27	17.7	0.7	3.3	7.8	32.2	45.6	11.1
	2	Pocket water	50	17.7	0.3	1.1	5.6	40.0	53.3	
	3	Pool	34	14.0	0.8		4.4	18.9	45.6	31.1

Table 8. Continued.

Section	Reach	Habitat	Length (m)	Mean width (m)	Mean depth (m)	Percent substrate composition				
						Sand	Gravel	Rubble	Boulder	Bedrock
3	4	Pool	50	25.1	0.3			40.0	51.1	8.9
	5	Pool	28	12.3	0.7	3.3	4.4	14.4	53.3	25.6
	6	Pool	31	13.7	0.9		2.2	33.3	47.8	16.7
	7	Pocket water	50	21.3	0.2		1.1	36.7	45.6	16.7
	8	Pool	78	16.0	0.6	6.7	10.0	38.3	36.7	8.3
	9	Pool	32	15.1	0.6	3.3	5.6	42.2	42.2	6.7
4	1	Pool	35	20.7	0.4		8.3	50.0	41.7	
	2	Run/glide	43	16.3	0.5	0.2	13.3	27.8	58.7	
	3	Pool	30	18.3	1.3	1.1	3.3	53.3	35.6	5.6
	4	Pool	66	14.7	0.6	1.3	19.2	36.3	57.8	
	5	Pool	35	17.2	1.0	1.7	15.0	15.0	27.8	32.8
	6	Run/glide	54	15.5	0.4	0.6	9.4	60.6	29.4	
	7	Pool	32	12.8	0.6	0.6	4.4	21.1	75.0	
5	1	Pool	70	18.0	NA	NA	NA	NA	NA	NA
	2	Pool	45	15.0	0.8		4.0	86.0	10.0	
	3	Pocket water	40	14.6	0.6		10.0	20.0	70.0	
	4	Run/glide	84	27.3	0.5		10.8	24.4	71.3	
5	5	Pool	65	20.6	0.9	20.4	17.1	12.9	41.3	8.3
	6	Pool	26	36.4	NA	NA	NA	NA	NA	NA

Table 9. Estimated population abundance of all trout (>80 mm) captured by electrofishing several tributaries of the Little North Fork Clearwater River, Idaho, September 1997.

Stream	Reach	Length (m)	Mean width (m)	Area (m^2)	Number of trout collected: Pass 1	Number of trout collected: Pass 2	Number of trout collected: Pass 3	Population estimate	Confidence Interval (95%)	Density (trout/100m^2)
Lund Cr.	1	40	8.1	324	9	3	--	12	±2	3.7
	2	42	9.5	399	9	0	--	9	±0	2.3
	3	30	4.5	137	8	1	--	9	±1	6.6
Little Lost Lake Cr.	1	43	4.8	207	10	2	--	12	±1	5.8
	2	36	4.2	151	6	3	--	9	±3	6.0
	3	31	2.5	78	0	0	--	0	0	0
	4	34	1.9	65	0	0	--	0	0	0
Lost Lake Cr.	1	35	2.8	98	4	1	--	5	±1	4.1
	2	36	2.5	90	7	0	--	7	0	7.9
	3	38	4.3	163	9	0	--	9	0	4.7
Little North Fork Clearwater R.[1]	1	30	2.7	81	0	0	--	0	0	0
	2	30	3.2	96	1	0	--	1	0	1
	3	30	5.8	174	0	0	--	0	0	0

Table 9. Continued.

Stream	Reach	Length (m)	Mean width (m)	Area (m^2)	Number of trout collected: Pass 1	Pass 2	Pass 3	Population estimate	Confidence Interval (95%)	Density (trout/100m^2)
L.N.F.Clearwater	4	30	2.7	81	0	0	--	0	0	0
	5	39	4.5	176	0	0	--	0	0	0
Rocky Run Cr.[2]	1	32	6.9	221	0	0	--	0	0	0
	2	38	5.2	198	1	0	--	1	0	0.5
	3	35	9.7	340	0	0	--	0	0	0
	4	30	6.3	189	1	0	--	1	0	0.5
	5	34	6.9	239	5	1	--	6	±1	2.5
	6	37	7.1	263	10	0	--	10	0	3.8
	7	30	3.7	111	10	0	--	10	0	9.0
Rocket Cr.[3]	1	100	--	--	4	--	--	6	--	--
	2	100	--	--	4	--	--	6	--	--
	3	100	--	--	16	4	2	23	±2	--
	4	100	--	--	4	--	--	6	--	--

[1]This reach was from the confluence with Lost Lake Creek upstream.
[2]High water affected the capture effort in reaches 1-4.
[3]A catch efficiency was calculated from the multiple pass reach and applied to the single pass reaches to estimate population abundance.

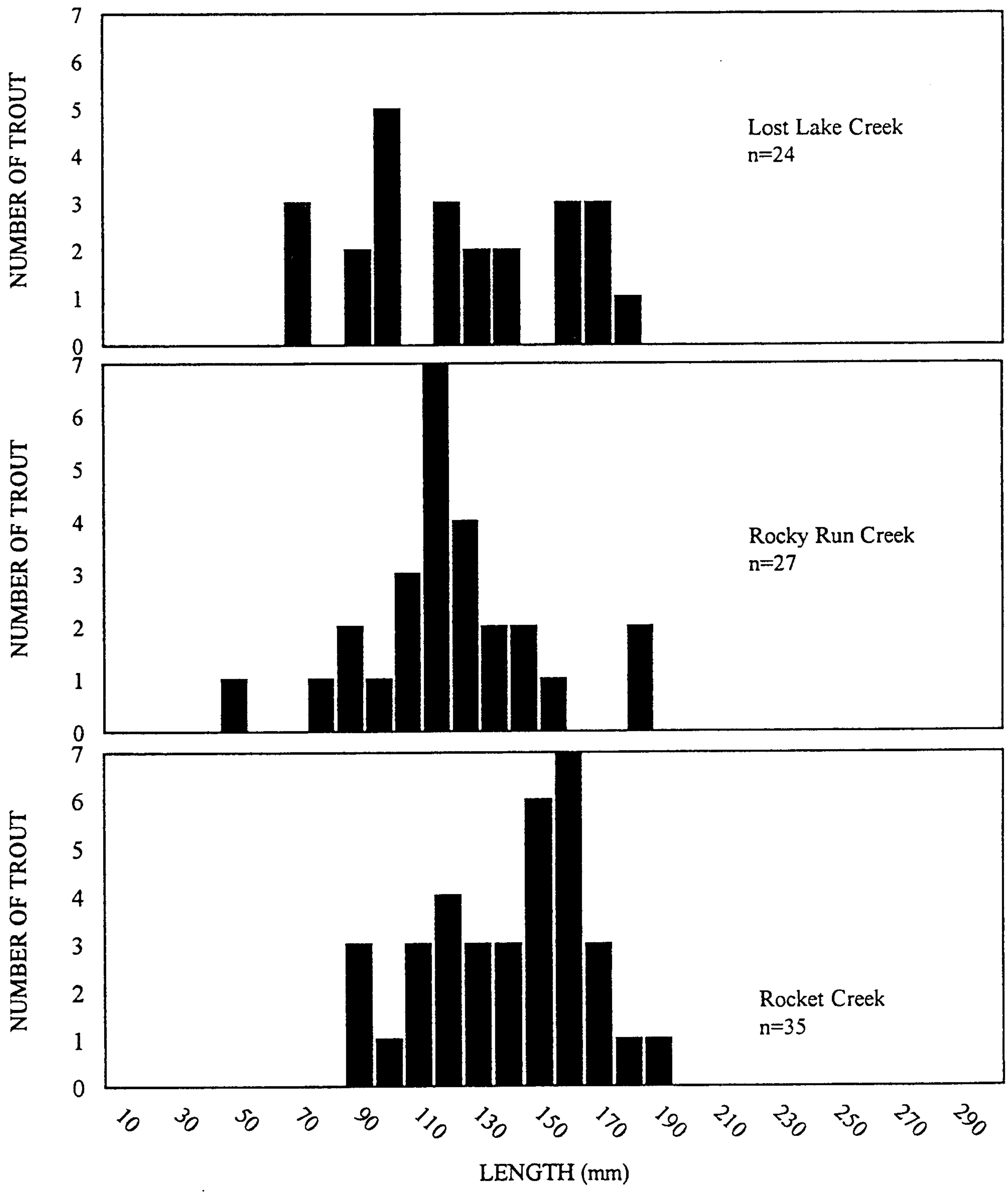
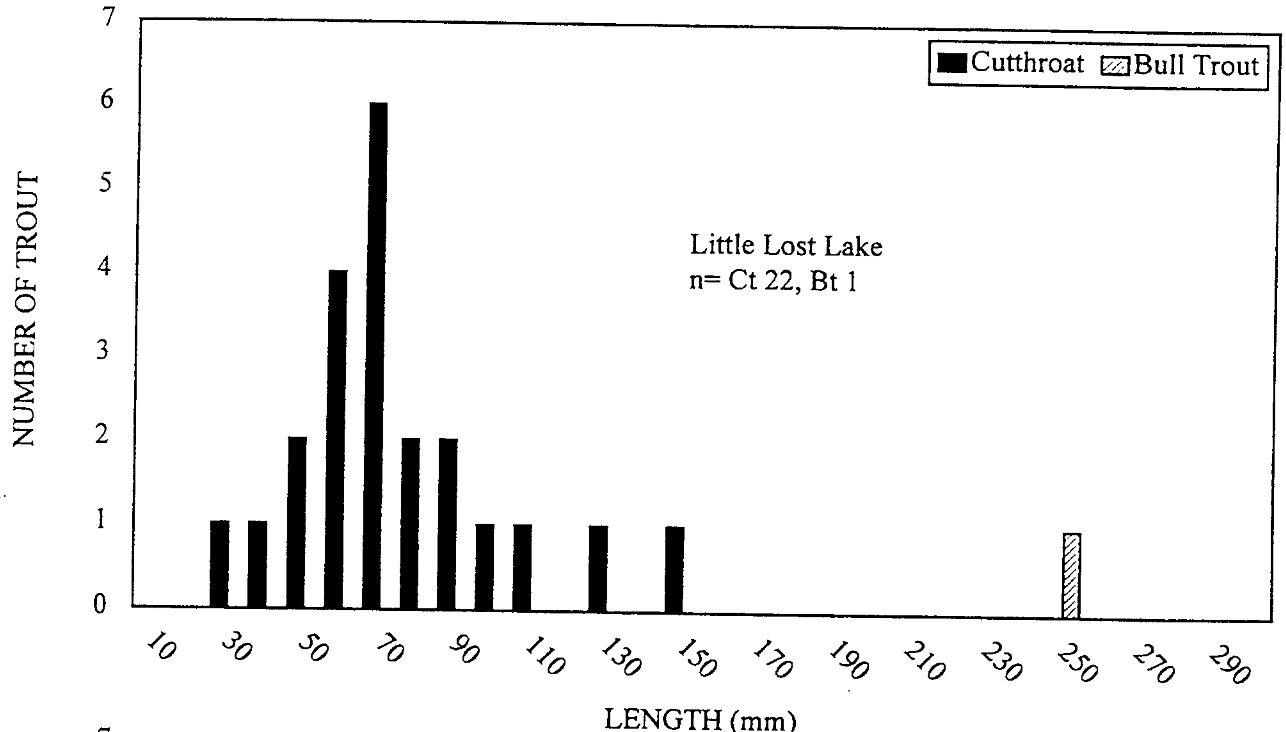


Figure 12. Length frequency of cutthroat trout captured by electrofishing in Lost Lake, Rocky Run, and Rocket creeks, Little North Fork Clearwater River, Idaho, September 1997.



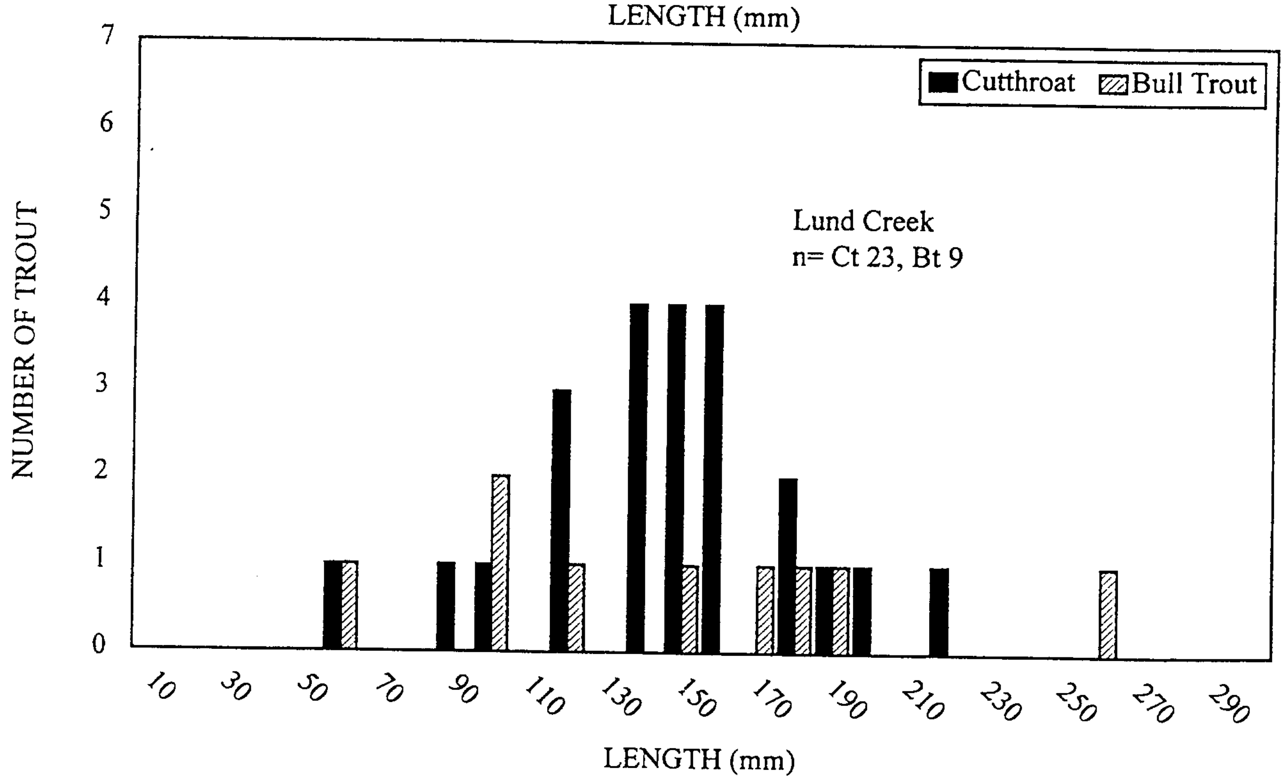


Figure 13. Length frequency of trout captured by electrofishing Little Lost Lake and Lund creeks, Little North Fork Clearwater River, Idaho, September 1997.

Table 10. Summary of habitat parameters, habitat types and substrate composition in selected tributaries of the Little North Fork Clearwater River, Idaho, 1997.

					Percentage habitat types				Percentage substrate				
Stream	Reach	Length (m)	Mean width (m)	Mean depth (m)	Pool	Riffle	Run/ glide	Pocket water	Sand	Gravel	Rubble	Boulder	Bedrock
Lund Cr.	1	40	4.1	0.2	30	40	20	10		20	49	31	
	2	42	9.5	0.2	45	45	5	5		24	63	12	
	3	30	4.5	0.3	30	20	10	40		12	43	29	16
Lost Lake Cr.	1	35	2.8	0.2	40	45	5	10		34	64	2	
	2	36	2.5	0.2	60	30	10		22	57	19	2	
	3	38	4.3	0.3	70	15	15		10	40	40	10	
Little Lost Lake Cr.	1	43	4.8	0.2	40	45	10	5	15	48	36	1	
	2	36	4.2	0.1	30	40	20	10	5	6	41	47	1
	3	31	2.5	0.2	30	50	10	10	10	72	18		
	4	34	1.9	0.1		50	20	30	3	78	19		
L.N.F. Clearwater R.	1	30	2.7	0.2	75	25				100			
	2	30	3.2	0.2	10		90		27	73			
	4	33	5.8	0.2	35		65		22	42	36		
	5	30	2.7	0.1	5		95		2	54	44		
	6	39	4.5	0.1	10	90				14	78	8	

Table 10. Continued.

Stream	Reach	Length (m)	Mean width (m)	Mean depth (m)	Percentage habitat types				Percentage substrate					
					Pool	Riffle	Run/ glide	Pocket water	Sand	Gravel	Rubble	Boulder	Bedrock
Rocky Run Cr.	1	35	6.9	0.3	20	60	15	5	1	48	27	19	
	2	37	7.1	0.2	30	70				44	40	16	
	3	30	3.7	0.2	30	60		10		39	40	21	
	4	32	6.6	0.3			100				30	70	
	5	38	5.2	0.2			100				8	92	
	6	30	6.3	0.3	60		40				48	52	
	7	35	9.7	0.3			65	35		17	60	23	

Boulder-sized substrate appeared to be the most abundant substrate type in Rocky Run Creek (Table 10). Gravel-sized substrate appeared most abundant in Little Lost Lake Creek. Rubble-sized substrate appeared to be most abundant in Lund and Lost Lake creeks (Table 10).

Small Stream Surveys

Distribution

Westslope cutthroat trout were present in all surveyed streams (Table 11). Bull trout were captured in all but West Fork Blue Creek. Rainbow trout were captured in eight of twelve streams (Table 11). Brook trout were present in three streams: Porcupine, Twin, and Gold creeks. Cutthroat x rainbow hybrid trout were identified in East Fork Lightning and Porcupine creeks (Table 11).

Westslope cutthroat trout were present in 63 of the 73 sampling sites (Table 11). Generally, they were captured in sampling sites in the bottom to the upper most sampling sites with the exception of Porcupine Creek, where they were located in the bottom section. Westslope cutthroat trout was the only trout species captured in the West Fork Blue Creek.

Generally, if bull trout were found in the stream, they were found in most of the sampled reaches in each stream or upstream to a migration barrier (Table 11). Barriers exist in Char, Porcupine, Wellington, Rattle and Savage creeks.

Rainbow trout appeared to be most abundant in the bottom reaches of Savage, Char, Porcupine and Rattle creeks (Table 11). They were also captured in the middle reaches of Rattle and East Fork Lightning creeks.

Brook trout was the only trout species captured in the top reach of Porcupine Creek (Table 11). They were also found in the bottom reach. Brook trout were captured in the middle reach of Twin Creek. A single brook trout was captured in Gold Creek.

Abundance and Structure

In 1997, mean trout densities for all trout in streams surveyed ranged from 9.6 to 42.3 trout /100 m^2 (Table 12). Individual sampling site densities are listed in Appendix L. Site 1of reach 2 in the East Fork Lightning Creek was not included in the regression equation to estimate trout population abundance in single pass sampling sites. The population estimate in this site was an outlier when compared to the other two pass population estimates (Appendix L). Captured trout ranged in length from 30 to 770 mm TL (Figures 14-25). All captured trout over 360 mm TL were considered adult bull trout.

Westslope Cutthroat Trout-The highest mean densities of westslope cutthroat trout occurred in Char Creek (35.9 trout/100 m^2) followed by West Fork Blue Creek (33.6 trout/100 m^2) (Table 12). The lowest mean density occurred in the East Fork Lightning Creek (0.5 trout/100 m^2). Individual sampling site densities ranged from 0 to 86.2 trout/100 m^2 (Appendix M). Nine multiple pass sampling sites were pooled to form

Table 11. Trout species captured by electrofishing in sampled tributaries in the Pend Oreille Lakedrainage, Idaho, 1997.

Stream	Reach	Sampling site	Westslope cutthroat	Bull trout	Rainbow trout	Brook trout	Cutthroat / rainbow
East Fork Lightning	1	1	+	+			+
		2		+			+
		3		+			+
	2	1		+	+		+
		2	+	+	+		+
		3		+			+
	3	1	+	+	+		+
		2	+	+			+
		3	+	+			+
Savage	1	1	+	+			
		2	+	+			
		3	+	+			
	2	1	+	+			
		2					
		3	+				
	3	1	+	+			
		2	+				
		3	+				
Char	1	1	+	+	+		
		2	+	+	+		
		3	+	+	+		
	2	1	+		+		
		2	+				
		3	+				

Table 11. Continued.

Stream	Reach	Sampling site	Westslope cutthroat	Bull trout	Rainbow trout	Brook trout	Cutthroat / rainbow
Char	3	1	+				
		2	+				
		3	+				
Porcupine	1	1	+	+	+	+	+
		2	+	+	+		+
		3	+	+	+		+
	2	1	+	+			
		2	+	+			
		3	+	+			
	3	1				+	
		2				+	
		3					
Wellington	1	1		+			
		2	+				
		3	+				
	2	1	+				
		2	+				
		3	+				
	3	1	+				
		2	+				
		3	+				
Rattle	1	1		+	+		
		2		+	+		
		3		+			
	2	1			+		

Table 11. Continued.

Stream	Reach	Sampling site	Westslope cutthroat	Bull trout	Rainbow trout	Brook trout	Cutthroat / rainbow
Rattle		2	+	+	+		
		3	+	+			
	3	1	+				
		2	+				
		3	+				
Trestle	1	1	+				
	2	1	+	+			
	3	1	+	+			
	4	1	+	+			
	5	1	+	+			
	6	1	+	+			
	7	1	+	+			
	8	1	+	+			
	9	1	+	+			
Twin	1	1	+	+			
		2		+	+		
		3					
	2	1	+			+	
		2	+			+	
		3	+			+	
	3	1	+				
		2	+				
		3					
West Fork Blue	1	1	+				
		2	+				

Table 11. Continued.

Stream	Reach	Sampling site	Westslope cutthroat	Bull trout	Rainbow trout	Brook trout	Cutthroat / rainbow
West Fork Blue		3	+				
	2	1					
		2					
		3					
	3	1	+				
		2	+				
		3	+				

Table 12. Average and range of densities for westslope cutthroat trout, bull trout, and all trout captured by electrofishing in several tributaries in the Lake Pend Oreille drainage, Idaho, 1997.

	Average density and range of densities (trout/100 m^2)					
Stream	Westslope cutthroat		Bull trout		All trout	
	Mean	Range	Mean	Range	Mean	Range
East Fork Lightning Cr.	0.5	0-2.9	2.6	0-9.3	26.4	7.5-32.8
Savage Cr.	17.6	2.9-31.7	1.8	0-5.2	20.7	9.0-33.3
Char Cr.	35.9	11.1-86.2	1.5	0-6.9	42.3	15.3-86.7
Rattle Cr.	4.8	0-15.4	1.9	0-8.1	13.6	7.2-18.9
Porcupine Cr.	2.5	0-6.2	1.2	0-5.9	9.6	3.5-23.7
Wellington Cr.	8.4	0-25.0	0.2	0-0.4	10.5	0-26.5
Trestle Cr.	4.6	2.5-6.3	4.2	0-6.8	11.8	6.6-17.5
Twin Cr.	6.1	0-17.8	1.8	0	15.2	0-26.7
West Fork Blue Cr.	33.6	28.6-50.0	0	0	34.3	24.5-52.4

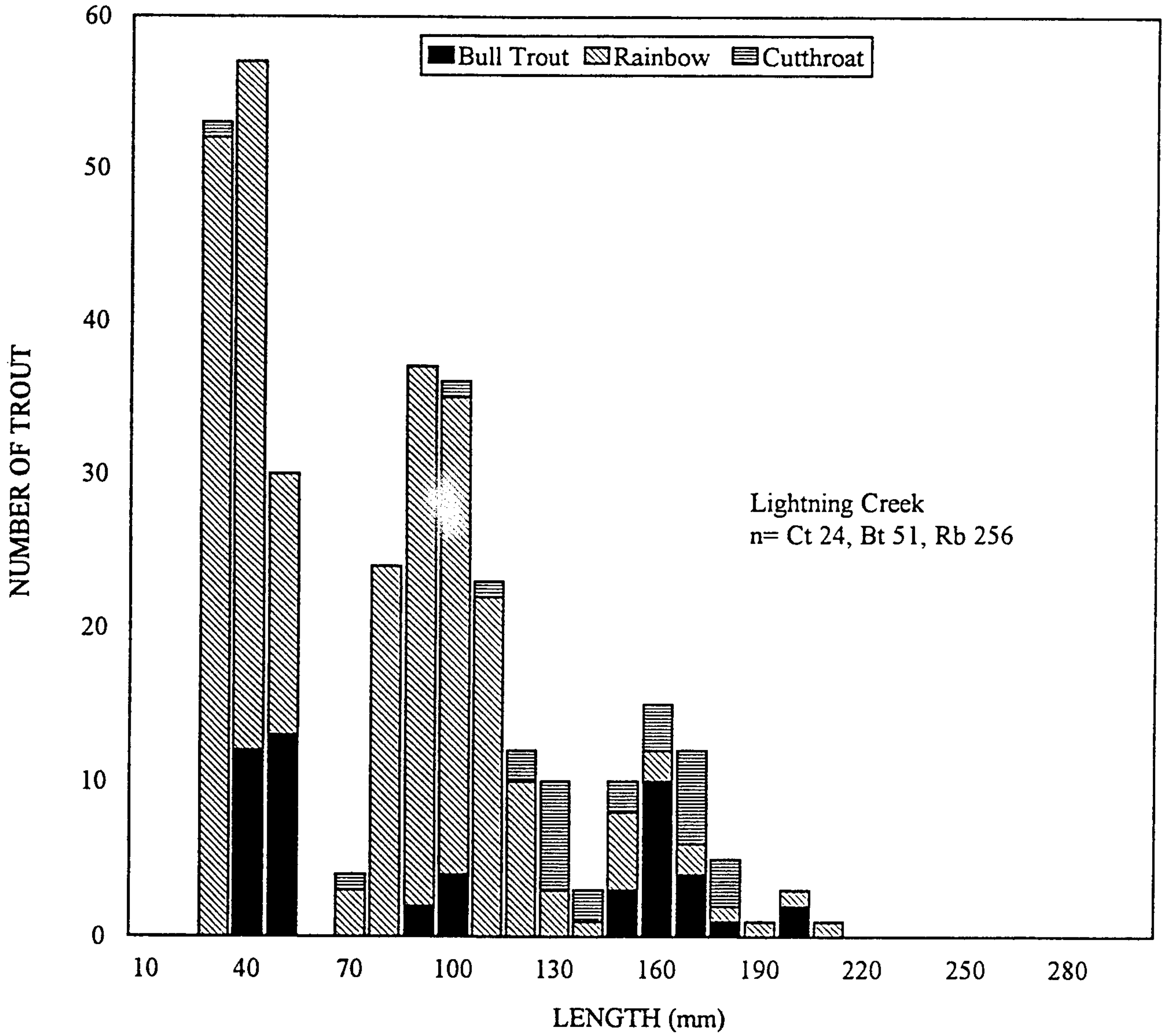


Figure 14. Length frequency of trout and char captured by electrofishing in Lightning Creek, Pend Oreille Lake drainage, Idaho, 1997.

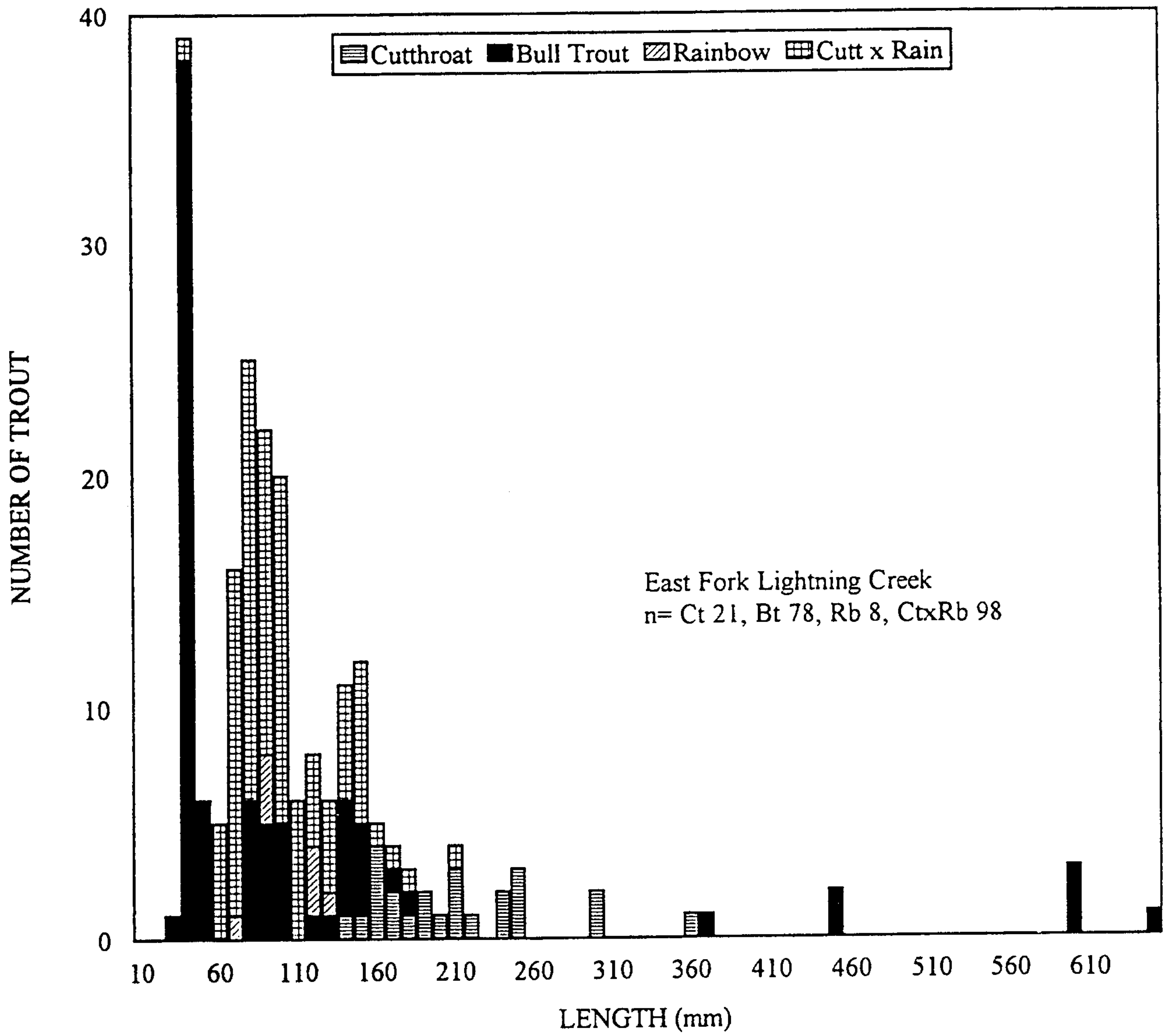


Figure 15. Length frequency of trout and char captured by electrofishing from East Fork Lightning Creek, Pend Oreille Lake drainage, Idaho, 1997.

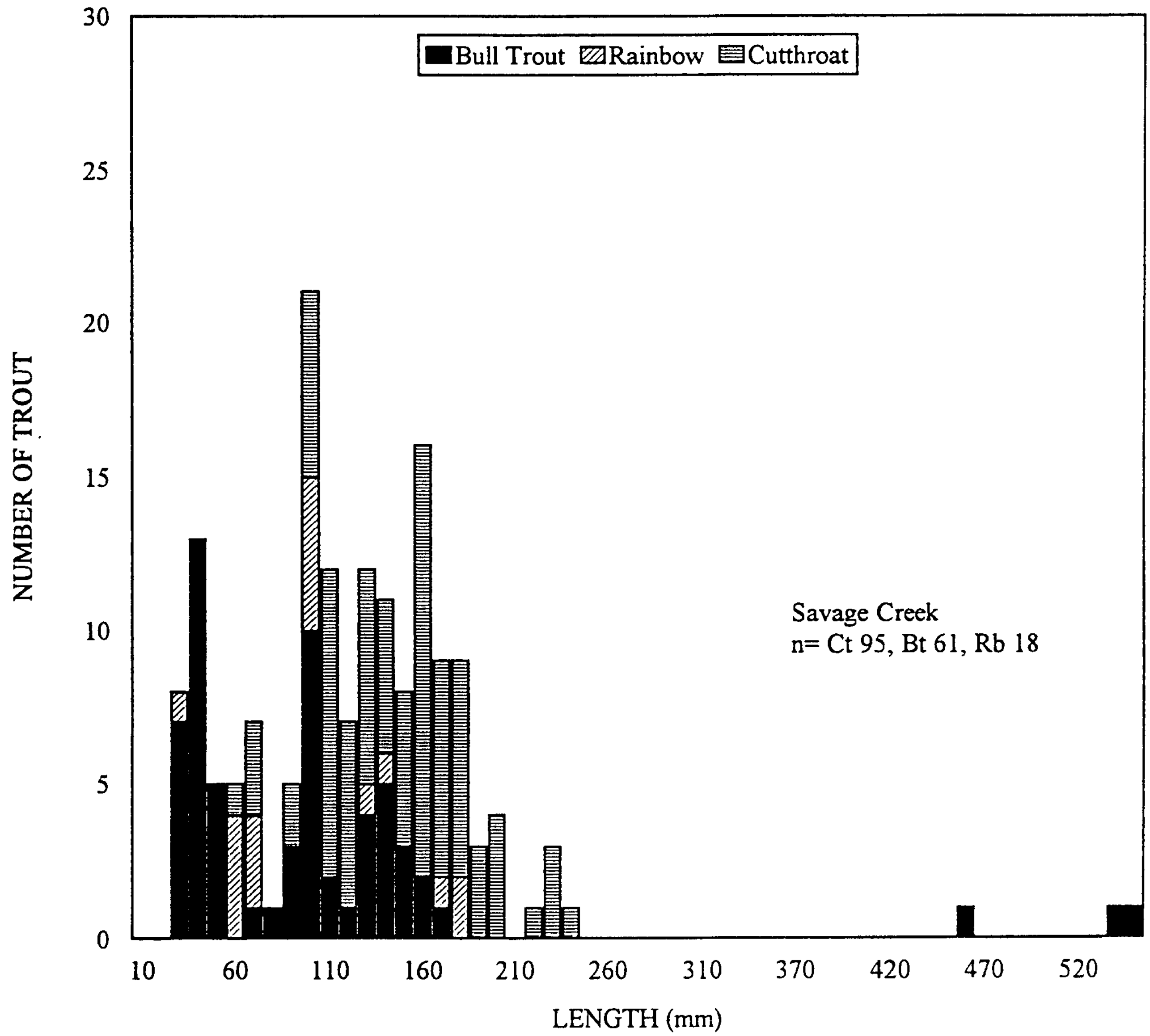


Figure 16. Length frequency of trout and char captured by electrofishing from Savage Creek, Pend Oreille Lake drainage, Idaho, 1997.

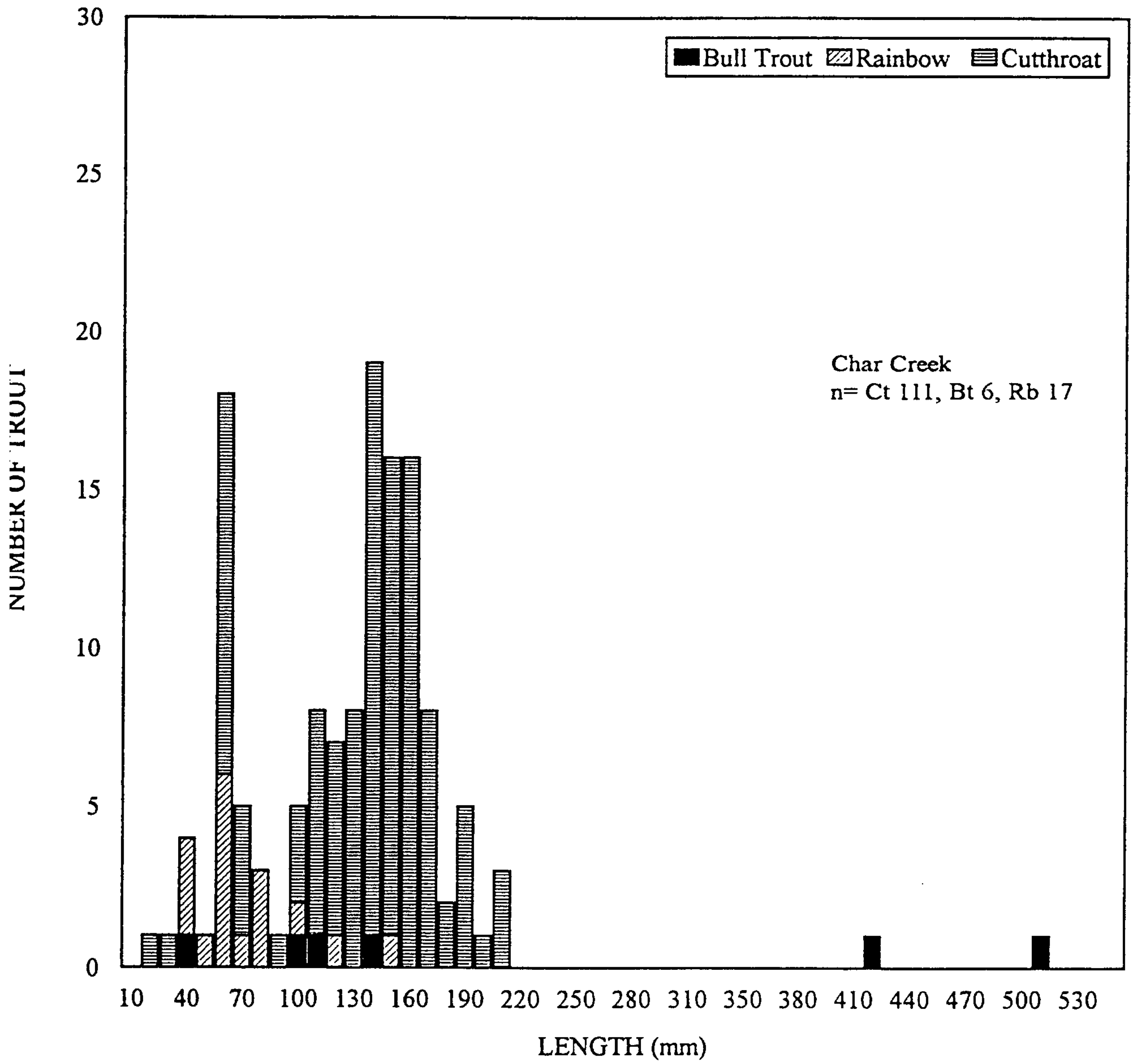


Figure 17. Length frequency of trout and char captured by electrofishing from Char Creek, Pend Oreille Lake drainage, Idaho, 1997.

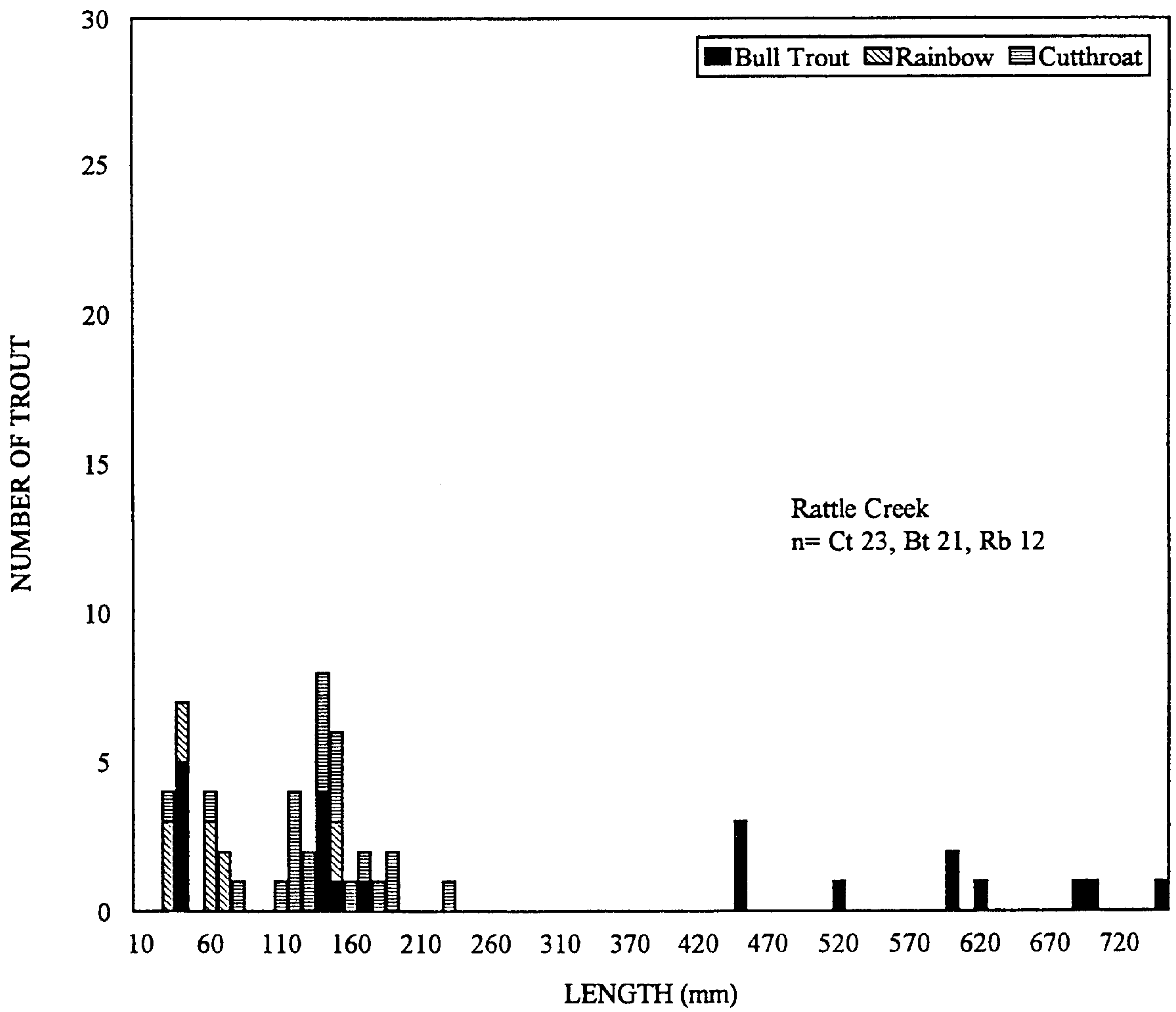


Figure 18. Length frequency of trout and char captured by electrofishing from Rattle Creek, Pend Oreille Lake drainage, Idaho, 1997.

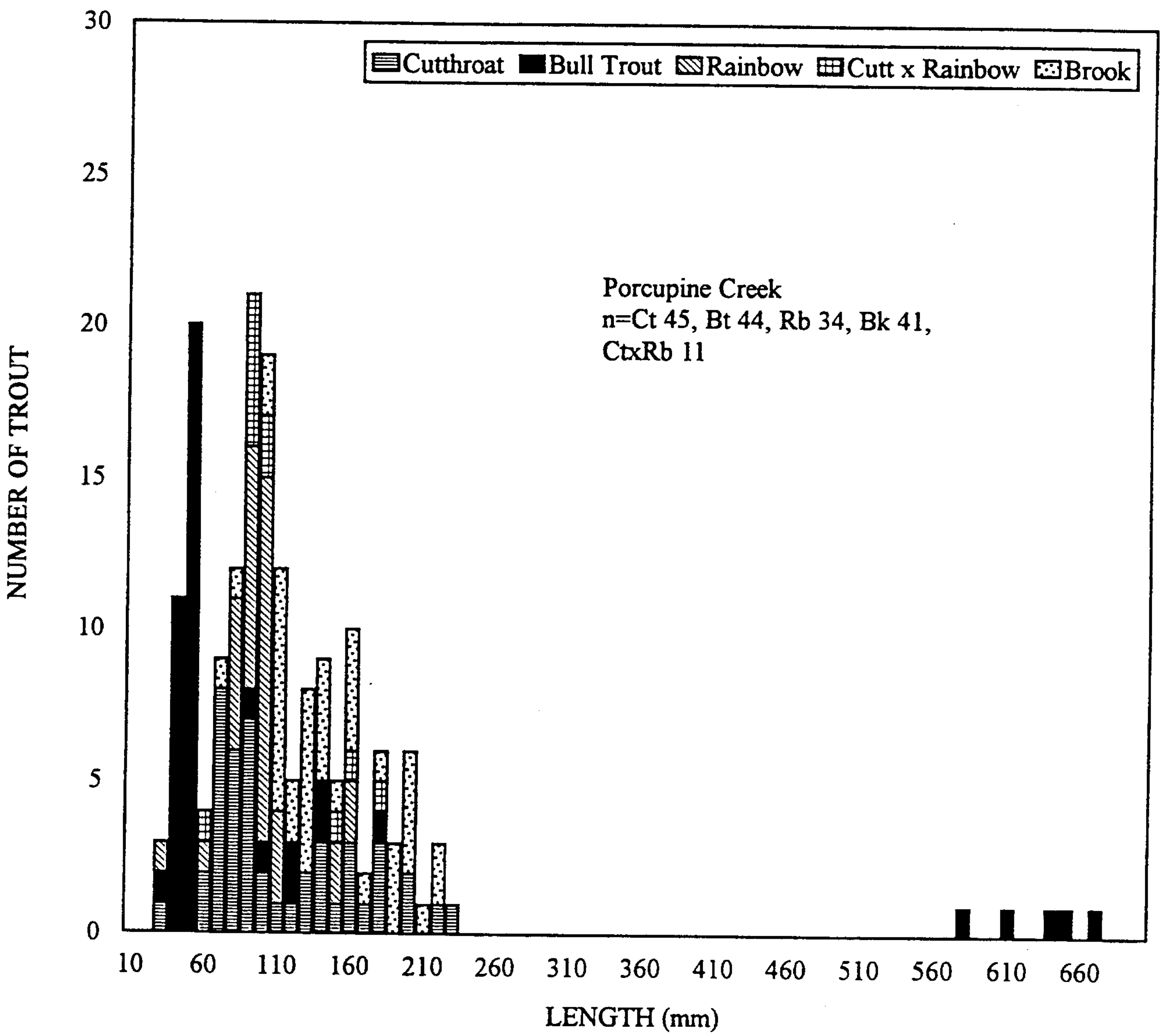


Figure 19. Length frequency of trout and char captured by electrofishing from Porcupine Creek, Pend Oreille Lake drainage, Idaho, 1997.

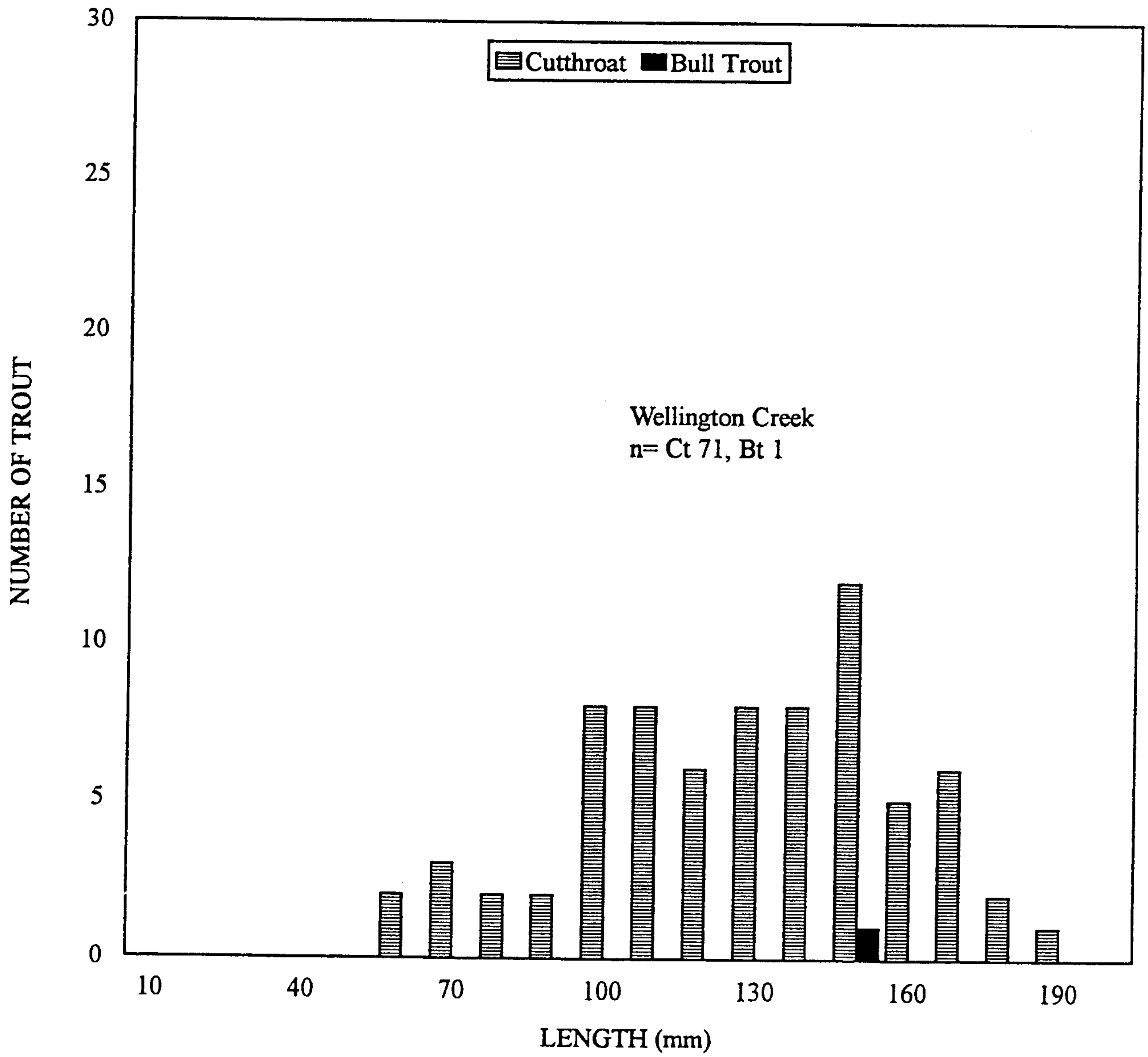


Figure 20. Length frequency of trout and char captured by electrofishing from Wellington Creek, Pend Oreille Lake drainage, Idaho, 1997.

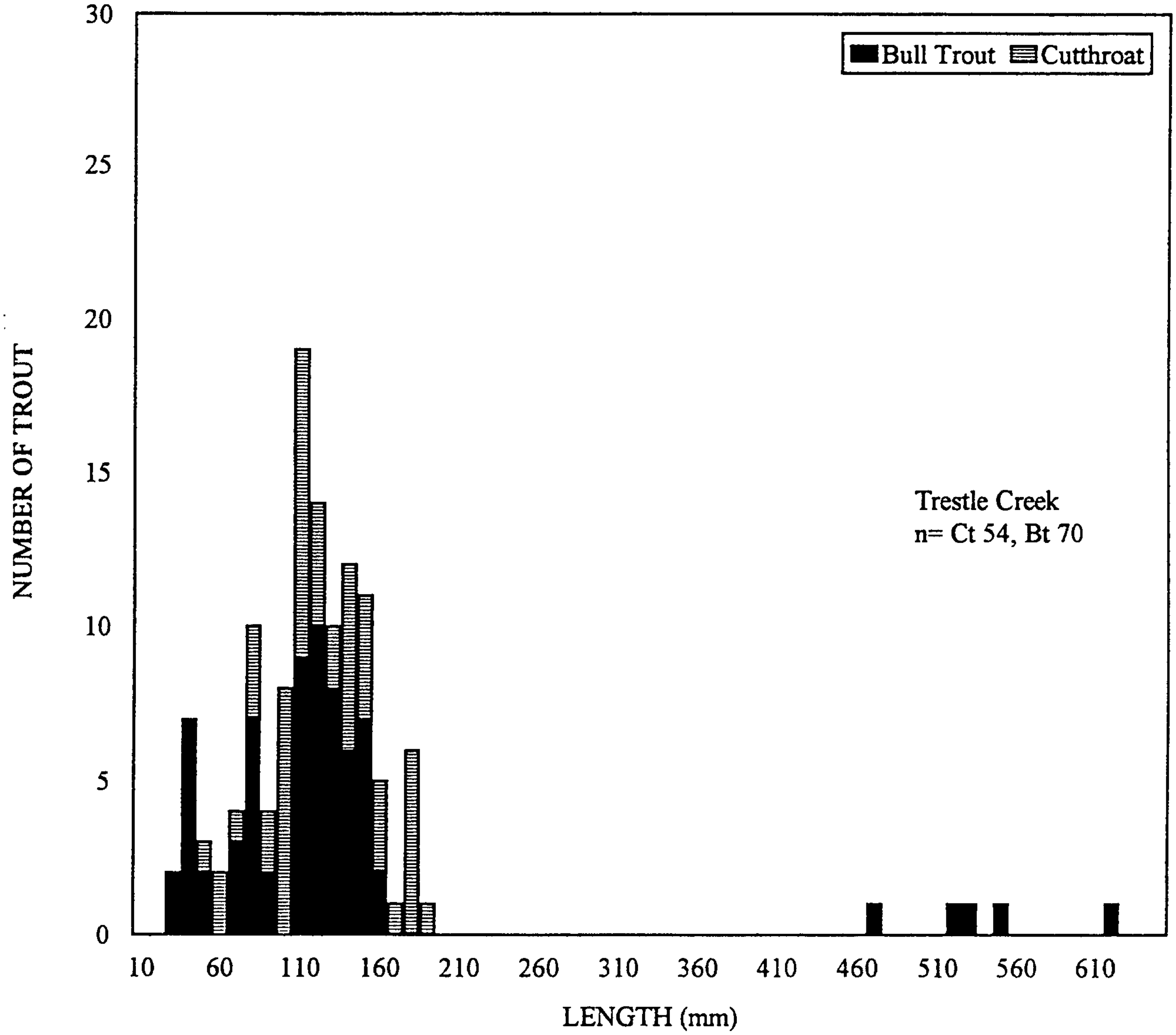


Figure 21. Length frequency of trout and char captured by electrofishing from Trestle Creek, Pend Oreille Lake drainage, Idaho, 1997.

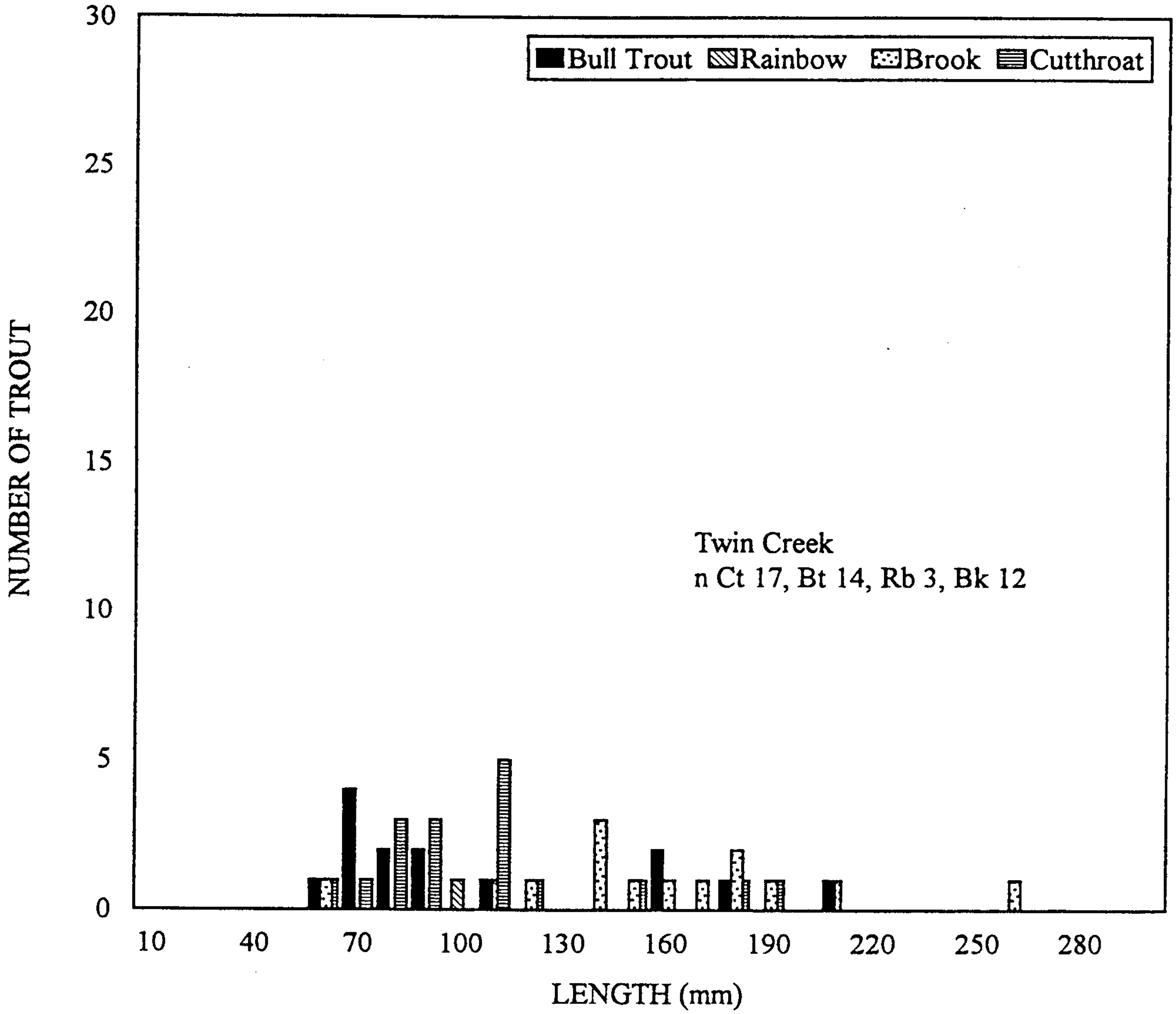


Figure 22. Length frequency of trout and char captured by electrofishing in Twin Creek, Pend Oreille Lake drainage, Idaho, 1997.

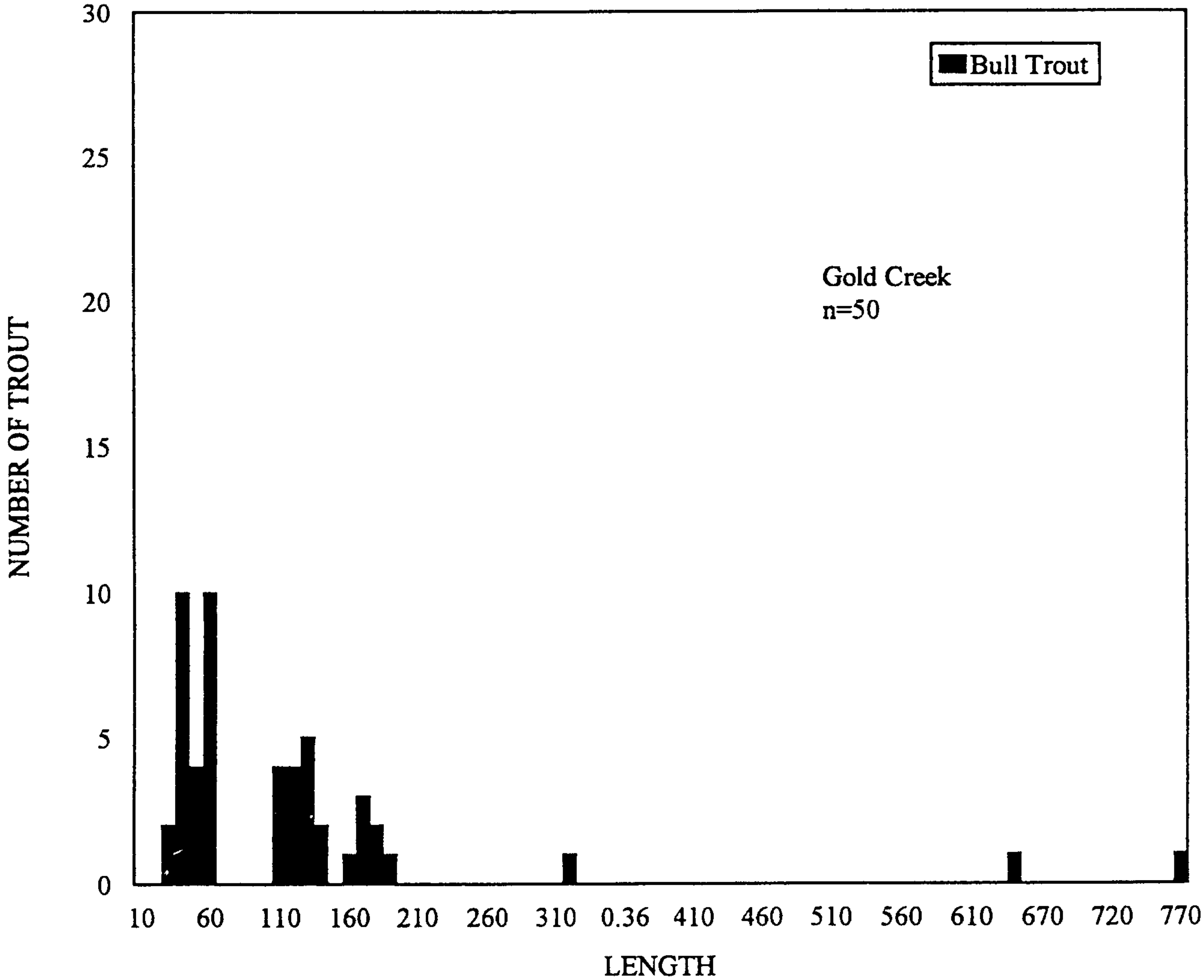


Figure 23. Length frequency of bull trout captured by electrofishing from Gold Creek, Pend Oreille Lake drainage, Idaho, 1997.

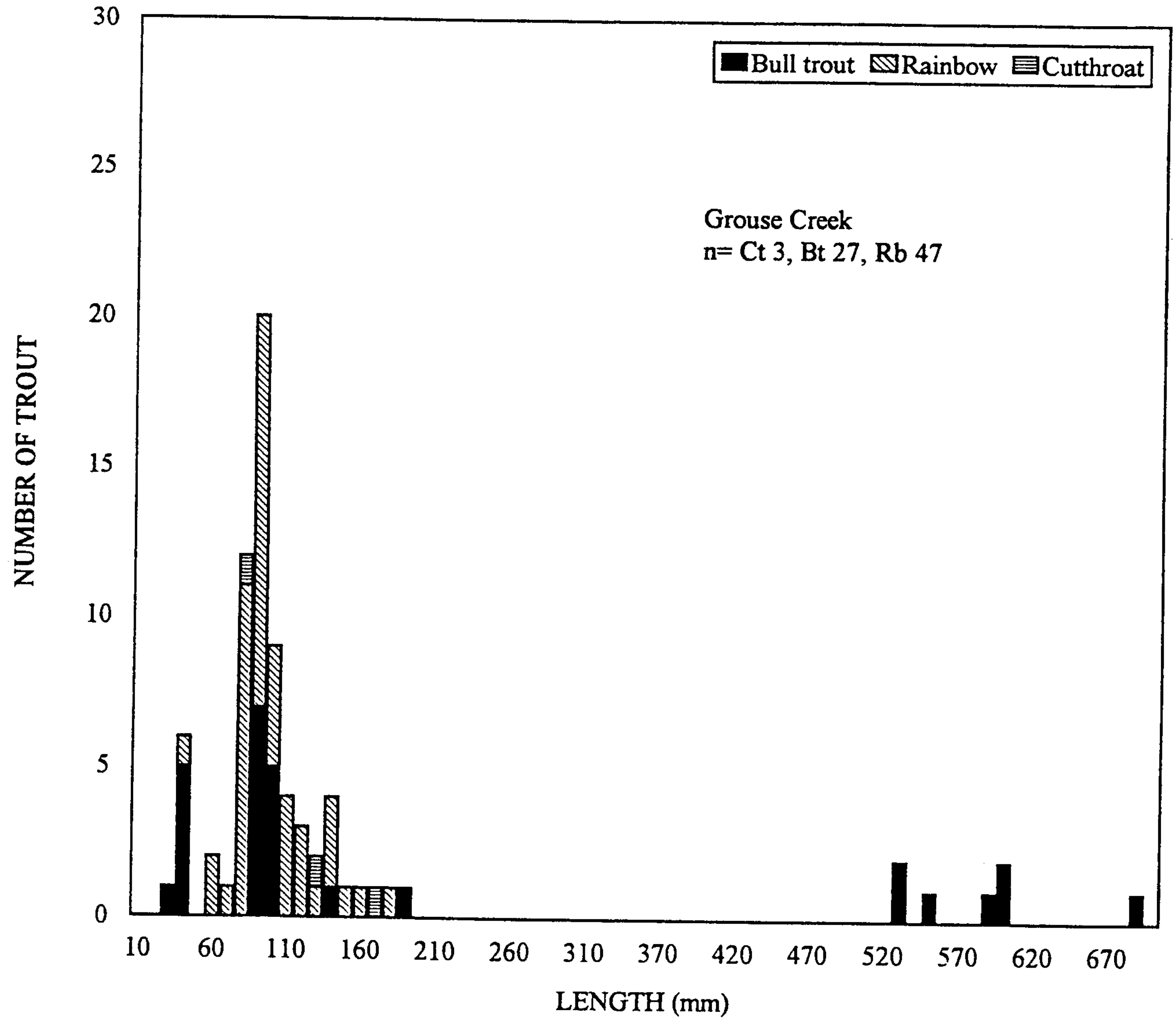


Figure 24. Length frequency of trout and char captured by electrofishing in Grouse Creek, Pend Oreille Lake drainage, Idaho, 1997.

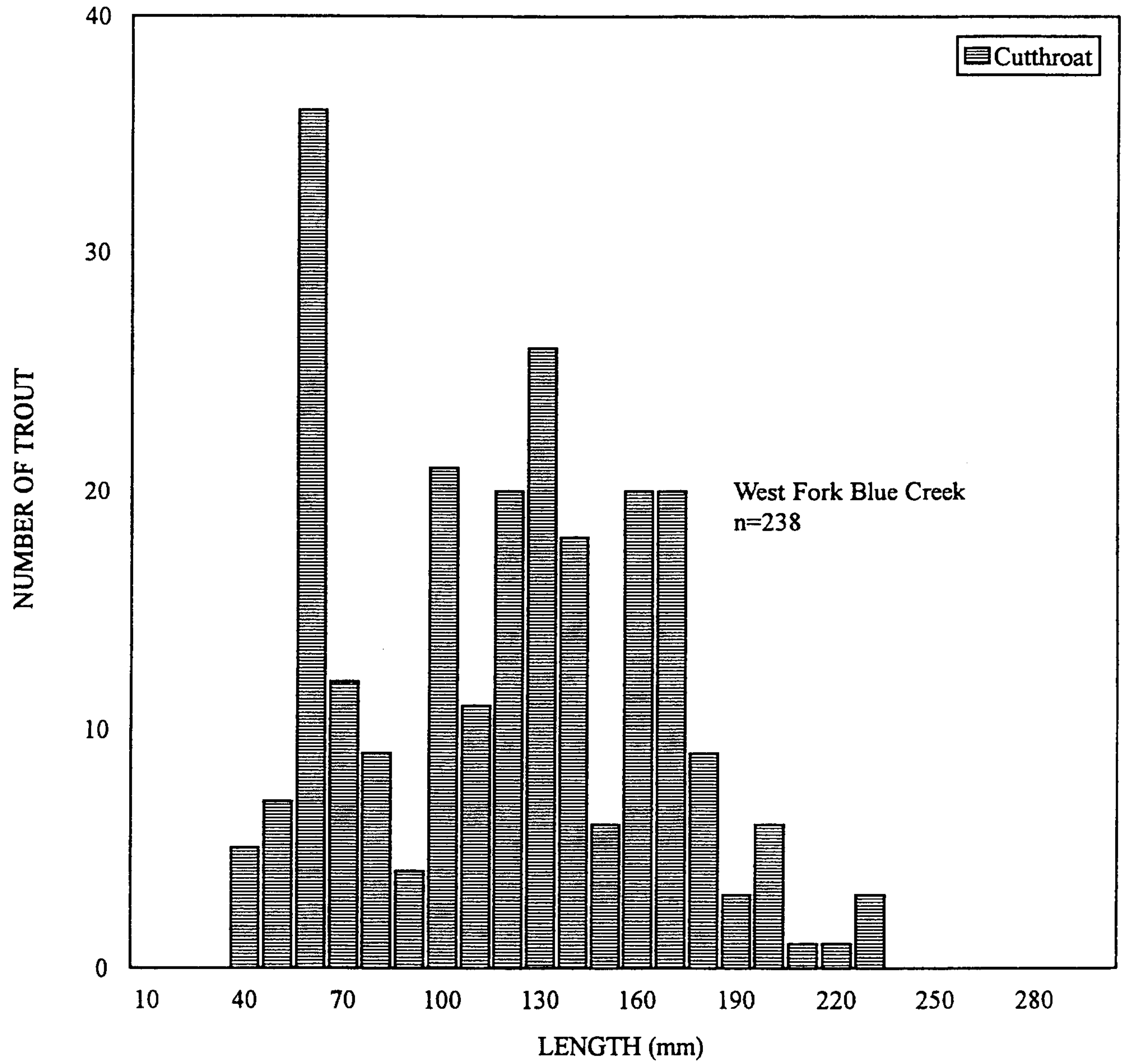


Figure 25. Length frequency of westslope cutthroat trout captured by electrofishing from West Fork Blue Creek, Pend Oreille Lake drainage, Idaho, 1997.

the linear regression equation (y=1.4677 (x)+2.1290) used to estimate westslope cutthroat trout abundance in single pass sampling sites (Appendix M).

Lengths of captured westslope cutthroat trout ranged from 20 - 360 mm (Figure 26). Cutthroat trout between 100 and 120 mm dominated the catch.

Bull Trout-Trestle Creek had the highest mean density of bull trout greater than 80 mm (4.2 trout/100 m^2) (Table 12). The lowest mean density occurred in Wellington Creek (0.2 trout/100 m^2). Individual sampling site densities ranged from 0 to 9.3 trout/100 m^2 (Appendix N). Six multiple pass sampling sites were pooled to develop the linear regression equation (y = 1-8039 (x) + (-0.6215) used to estimate bull trout abundance in the single pass sites (Appendix N). West Fork Blue Creek was not included in total for bull trout because evidence suggests bull trout were not present historically (Pratt and Huston 1993).

Captured bull trout ranged in length from 30 to 770 mm (Figure 27). Bull trout over 360 mm were considered adults. A large number of age-0 bull trout (163) were captured in 1997 (Figure 27).

Rainbow Trout-The highest number of rainbow trout (256) were captured in Lightning Creek (Figure 14). The lowest number of rainbow trout captured (3) occurred in Twin Creek (Figure 22). No rainbow trout were found in Wellington, West Fork Blue, Trestle, and Gold creeks. The trout population estimates in Reach 2 and 3 in Lightning Creek were 426 and 107, respectively (Table 13). Trout densities for Reaches 2 and 3 were 6.7 and 2.8 trout/100 m^2, respectively. Rainbow trout were the most abundant species captured followed by bull trout (Figure 14). Density estimates for the remaining tributaries were not calculated because there were no population estimates from multiple pass sampling sites for rainbow trout to calculate a catch efficiency estimate.

Captured rainbow trout ranged in length from 30 to 210 mm (Figure 28). A large number (158) of age-0 rainbow trout were also captured.

Brook Trout-The highest number of brook trout (40) were captured in Porcupine Creek. The highest concentration occurred in the uppermost reach. Twelve brook trout were captured in Twin Creek and one in Gold Creek. Captured brook trout ranged in length from 70 to 260 mm (Figure 29). Thirty-two brook trout (58%) were between 110 and 160 mm.

Bull Trout Spawning Surveys

Pend Oreille Lake Drainage-The 527 bull trout redds counted in the Pend Oreille Lake drainage in 1997 were significantly less ($P<0.1$) than the 8-year average of 690 bull trout redds (1986, 1991, and 1995 bull trout redd counts were not included because counts were done too early in the run, which resulted in an underestimate, or were not completed due to weather conditions (Table 14). The total bull trout redd count for the six index streams, which totaled 373 redds, was also significantly less ($P=0.014$) than an 11-year average of 516 bull trout redds (excluding 1986, 1991, and 1995). Using the expansion factor of 3.2 fish/redd (Fraley et al. 1981), an estimated 1,194 bull trout entered the six index stream reaches. The estimated number of bull trout entering the 20 stream reaches surveyed in the Pend Oreille Lake drainage in 1997 was 1,686.

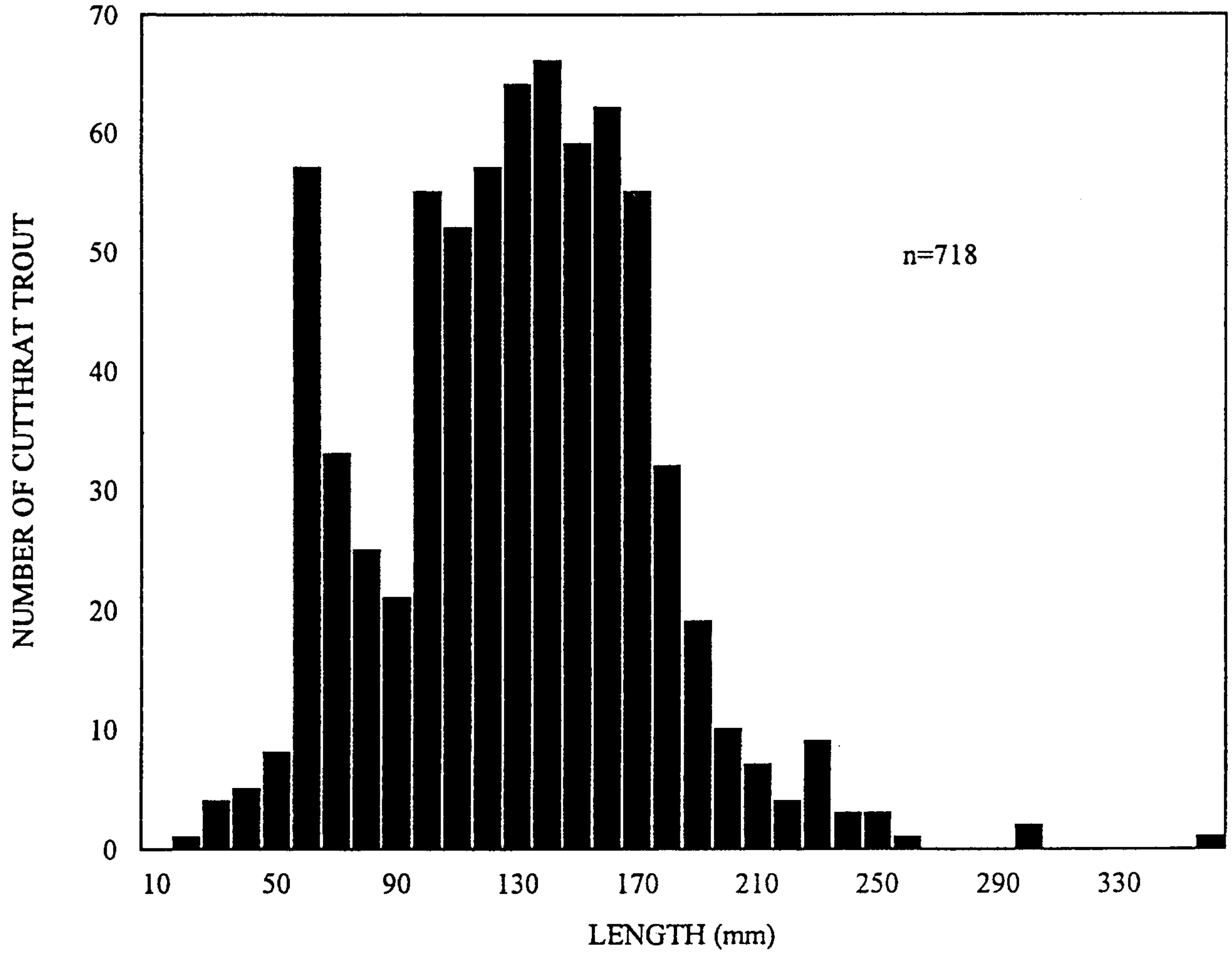


Figure 26. Length frequency of westslope cutthroat trout captured by electrofishing in sampled tributaries of the Pend Oreille Lake drainage, Idaho, 1997.

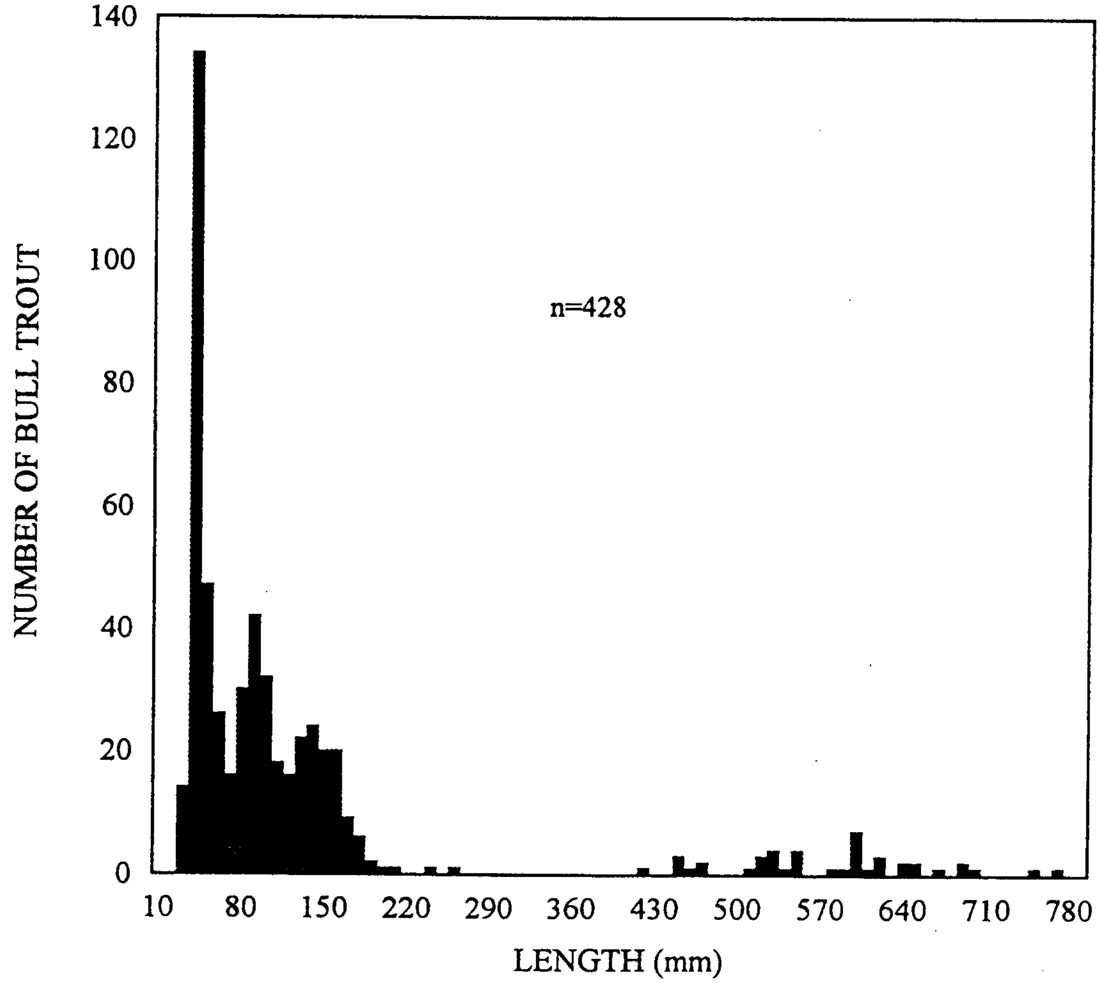


Figure 27. Length frequency of bull trout captured by electrofishing in sampled tributaries of the Clark Fork River, and Grouse, Trestle, and Gold creeks in the Pend Oreille Lake drainage, Idaho, 1997.

Table 13. Estimated abundance and density of trout captured by electrofishing in Lightning Creek, Idaho, 1997.

	Length (m)	Mean width (m)	Area (m^2)	Number trout marked	Number trout captured	Number trout recaptured	Estimated population abundance	Confidence interval (95%)	Density (trout/100 m^2)
Reach 2	305	21	6,405	34	71	6	426	±308	6.7
Reach 3	251	15	3,765	39	41	15	107	±34	2.8

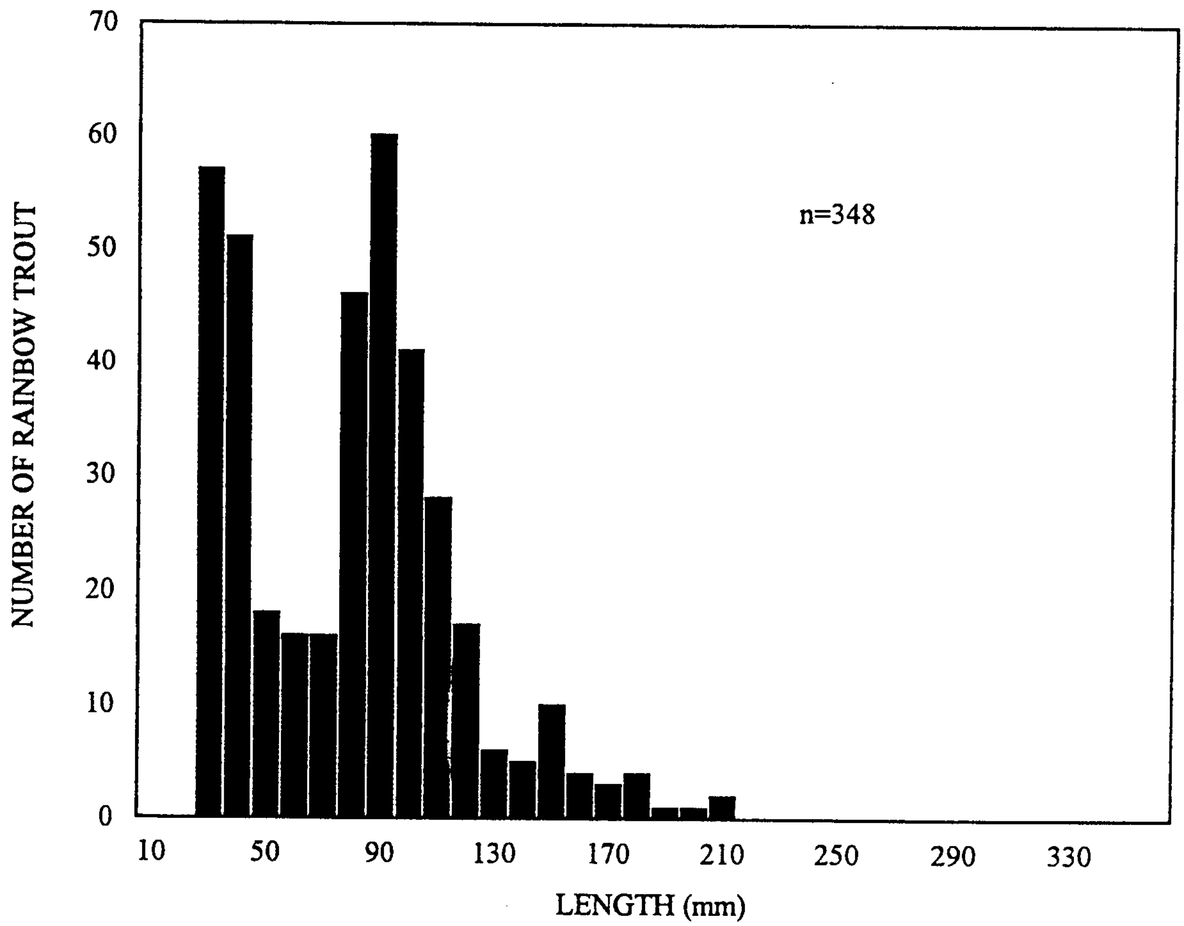


Figure 28. Length frequency of rainbow trout captured by electrofishing in sampled tributaries of the Pend Oreille Lake drainage, Idaho, 1997.

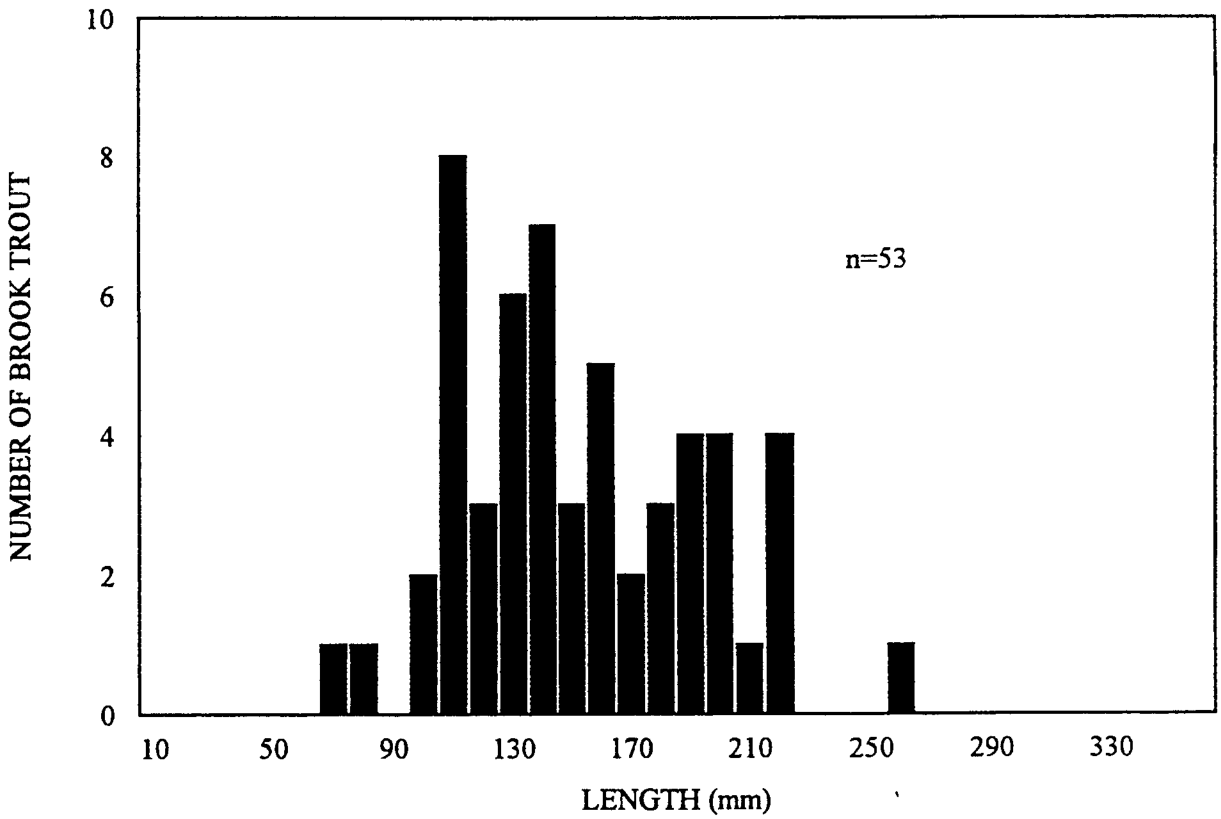


Figure 29. Length frequency of brook trout captured by electrofishing from Porcupine, Gold, and Twin creeks, Pend Oreille Lake drainage, Idaho, 1997.

Table 14. Number of bull trout redds counted per stream in the Pend Oreille Lake drainage, Idaho, 1983-1997.

	Total redds counted														
Area Stream	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996[g]	1997
CLARK FORK RIVER	--	--	--	--	--	--	--	--	--	2	8	17	18[f]	3	7
Lightning Cr.	28	9	46	14	4	--	--	--	--	11	2	5	0[de]	6	0
East Fork	110	24	132	8	59	79	100		--[a]	32	27	28	3[de]	49	22
Savage Cr.	36	12	29	--	0	--	--	--	--	1	6	6	0[d]	0	0
Char Cr.	18	9	11	0	2	--	--	--	--	9	37	13	2[de]	14	1
Porcupine Cr.	37	52	32	1	9	--	--	--	--	4	6	1	2[d]	0	0
Wellington Cr.	21	18	15	7	2	--	--	--	--	9	4	9	1[de]	5	2
Rattle Cr.	51	32	21	10	35	--	--	--	--	10	8	0	1[d]	10	2
Johnson Cr.	13	33	23	36	10	4	17	33[b]	25	16	23	3	4[d]	5	27
Twin Cr.	7	25	5	28	0	--	--	--	--	3	4	0	5[d]	16	6
NORTH SHORE															
Trestle Cr.	298	272	298	147	230	236	217	274	220	134	304	276	140[d]	243	221
Pack River	34	37	49	25	14	--	--	--	--	65	21	22	0[de]	6	4
Grouse Cr.	2	108	55	13	56	24	50	48	33	17	23	18	0[d]	50	8

Table 14. Continued.

Area Stream	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996[g]	1997
	Total redds counted														
EAST SHORE															
Granite Cr.	3	81	37	37	30	--	--	--	--	0	7	11	9[d]	47	90[h]
Sullivan Springs	9	8	14	--	6	--	--	--	--	0	24	31	9	15	42
North Gold Cr.	16	37	52	8	36	24	37	35	41	41	32	27	31	39	19
Gold Cr.	131	124	11	78	62	111	122	84	104	93	120	164	95	100	76
Total 6 index streams	570	598	671	290	453	478	543	503	423[c]	333	529	516	273	486	373
Total all streams	814	881	930	412	555	--	--	--	--	447	656	631	320	608	527

1983 and 1984 data reported by Pratt (1985).
1985 and 1986 data reported by Hoelscher and Bjornn (1989).
[a]Not surveyed in 1991 due to early snowfall.
[b]Upper section not surveyed, count is from Chute Creek downstream.
[c]Represents only a partial count due to early snowfall.
[d]Observation conditions impaired by high runoff.
[e]Stream counted twice, highest redd count reported.
[f]Two counts made same date, one by walking shoreline (7 redds observed) and one by snorkeling (18 redds observed).
[g]Two redds counted in Strong Creek.
[h]Three additional redds observed in Dry Gulch.

Priest Lake Drainage-In 1997, 22 bull trout redds were counted in the Upper Priest Lake drainage (Table 15). The number of bull trout redds counted in the Upper Priest Lake drainage, excluding redds counted above Rock Creek, was 18. This was similar to the five-year average (1992-1996) of 20 redds, excluding redds counted above Rock Creek in 1996 and 1997. In 1997, only eight redds were counted in the main river from Upper Priest Lake to the falls; in 1996, observers counted 25 redds between the mouth and approximately 4 km above the mouth of Rock Creek. An estimated 70 bull trout may have entered the Upper Priest Lake drainage to spawn.

St. Joe River Drainage-In 1997, 23 bull trout redds were counted in the upper St. Joe River drainage (Table 16). This was significantly less ($P=0.031$) than the five-year average (1992-1996) of 62 redds. Expanding the number of redds observed by 3.2 fish/redd, 74 bull trout were estimated to have spawned in the surveyed reaches of the upper St. Joe River drainage in 1997. The 19 redds counted in the index streams (Medicine and Wisdom creeks and the St. Joe River from Heller Creek upstream to St. Joe Lake) was significantly less ($P<0.1$) than the five-year average (1992-1996) of 43 redds.

Little North Fork Clearwater River-Six bull trout redds were identified in the upper Little North Fork Clearwater River drainage in 1997 (Table 17). Lund Creek had two and the new section of the Little North Fork Clearwater River between Lund Creek and Lost Lake Creek had three. The other redd was seen in Little Lost Lake Creek. The redds were found in gravel areas behind rocks, under stream banks, and at tail-outs of pools.

Table 15. Description of bull trout survey locations and transects locations, distance surveyed, and number of redds observed in the Priest Lake drainage, Idaho, 1992 to 1997.

Stream	Transect description	Distance (km)	Number of redds observed 1992	1993	1994	1995	1996	1997
Upper Priest R.	Falls to Rock Cr.	4.5	--	--	--	--	15	4
	Rock Cr. to Lime Cr.	1.1	--	2	1	1	2	0
	Lime Cr. to Snow Cr.	2.4	--	3	4	2	8	1
	Snow Cr. to Hughes Cr.	4.4	--	0	0	--	0	3
	Hughes Cr. To Priest Lake	1.6	--	0	0	--	0	--
Rock Cr.	Mouth upstream to F.S. trail 308 crossing	0.5	0	0	--	--	2	1
Lime Cr.	Mouth upstream approximately 0.8 km	0.8	0	0	--	--	0	2
Cedar Cr.	Mouth upstream approximately 1.6 km	1.6	--	0	2	1	0	1
Ruby Cr.	Mouth upstream to barrier waterfall upstream from F.S. Road 655	2.0	0	0	--	--	--	0
Hughes Cr.	North end of Hughes Meadow upstream to F.S. trail 312 crossing	2.0	7	3	2	0	1	4
	Foot bridge on F.S. trail 311 downstream to F.S. road 622 bridge	2.4	2	0	7	1	2	0
	F.S. road 622 downstream to mouth	8.0	--	1	--	--	2	3
Bench Cr.	Mouthupstreamn approximately 0.8 km	0.8	0	2	2	0	1	0
Jackson Cr.	Mouth upstream to F.S. trail 311 crossing	1.6	4	0	0	0	0	0
Gold Cr.	Mouth upstream approximately 2.0 km	2.0	5	2	6	5	3	0
Boulder Cr.	Mouth upstream to barrier waterfall	1.6	0	0	0	--	0	0
Trapper Cr.	Mouth upstream to approximately 0.8 km upstream from East Fork	3.2	--	4	4	2	5	3
Caribou Cr.	Mouth upstream to old road crossing	1.6	--	1	0	0	0	0
		Totals	18	18	28	12	41	22

Table 16. Number of bull trout redds counted in tributaries in the upper St. Joe River drainage, Idaho, 1992 to 1997.

	Number of redds[a] observed					
Stream	1992[b]	1993[c]	1994[d]	1995[e]	1996	1997
St. Joe River from Spruce Tree Campground to Bean Cr.	--	--	--	4	0	--
St. Joe River from Heller Cr. To St. Joe Lake [f]	10	14	3	20	14[g]	6
Beaver Cr. and Bad Bear Cr.	2	2	0	0	0	0
California Cr.	2	4	--	2	1	--
Fly Cr.	--	--	--	0	0	--
Gold Cr.	--	2	--	0	1	1
Heller Cr.	0	0	--	0	--	1
Medicine Cr.[f]	11	33	48	26	23	13
Mosquito Cr.	--	--	--	0	4	--
Red Ives Cr.	--	0	--	1	0	1
Ruby Cr.	0	1	--	8	--	--
Sherlock Cr.	0	3	--	2	1	1
Simmons Cr.	--	7	5	0	--	0
Simmons Cr (3 Lakes Cr to Washout Cr)	--	--	--	5	1	0
Washout Cr.	--	3	0	0	0	0
North Fork Simmons Cr.	--	0	1	0	--	--
Timber Cr.	--	0	1	0	--	--
Wisdom Cr.[f]	1	1	4	5	1	0
St. Joe R. Below Tento Cr. 1.6 km	--	--	--	--	3	--
Yankee Bar Cr.	1	0	--	--	--	0
Totals	57	71	61	73	49	23

[a] Only definite bull trout redd sightings are reported in this table. Bright/clean gravel areas reported as "possible" bull trout redds are not included.
[b] 1992 survey date was September 25.
[c] 1993 survey date was October 3.
[d] 1994 survey date was September 24.
[e] 1995 survey date was September 30.
[f] Bull trout index streams established in 1997.
[g] Three redds in section above Medicine Creek were reported as resident bull trout (4 small bull trout on small redds).

Table 17. Summary of bull trout redds counted in the upper Little North Fork Clearwater River drainage, Idaho, 1994 to 1997.

Stream	1994[1]	1995[2]	1996[3]	1997[4]
Lund Cr.	0	--	7	2
Little Lost Lake Cr.	0	--	1	1
Lost Lake Cr.	0	--	0	0
Little North Fork Clearwater River				
Lund Cr. to Lost Lake Cr	--	--	--	3
Lost Lake Cr. to headwaters	0	--	2	0
Total	0	--	10	6

[1] Survey dates September 16-22, observed 6 adult bull trout.
[2] Survey dates August 1995, redds were not counted, observed 10 adult bull trout.
[3] Survey dates September 30 - October 3, 1996, no adult bull trout were observed.
[4] Survey dates September 23 -25, 1997, observed one adult bull trout, no bull trout redds were counted in Butte Creek.

Spokane River Drainage Regulation Assessment

Angler Survey

St. Joe River-Responses from bait (11%), fly (82%), and lure (7%) anglers from the St. Joe River disagreed on several questions: Question 3 pertaining to expansion of the catch-and-release area; Questions 5 and 9 pertaining to harvesting fish; Questions 12 and 14 pertaining to stocking trout (Table 18). Bait anglers did not want to expand the catch-and-release section; fly anglers wanted an expansion; lure anglers were split. Bait anglers did not support regulations that would increase catch rates at the expense of reduced harvest. Fly and lure anglers supported more restrictive harvest regulations. Bait anglers did not release all the trout they caught whereas, fly and lure anglers tended to release all their trout. Bait anglers believed hatchery trout were just as enjoyable to catch as wild trout; fly and lure anglers disagreed. Bait and lure anglers thought hatchery stocking was important to maintain good trout fishing; fly anglers did not.

Bait anglers on the St. Joe River indicated they would decrease the amount of time spent fishing in the St. Joe River if the opportunities to harvest trout and use bait were eliminated (Table 19). Fly and lure anglers indicated they would increase or not change the amount of time spent fishing if the opportunities to harvest trout and use bait were eliminated (Table 19). Responses indicated the amount of fishing by bait, fly, and lure anglers would not change if hatchery stocking were decreased or eliminated. However, bait and lure anglers generally did not support elimination of hatchery stocking.

If the opportunity to harvest trout were eliminated on the St. Joe River, 24% of the bait and 25% of the lure anglers would stop fishing (Table 19). If the opportunity to use bait was eliminated, 3% of the bait anglers and 5% of the lure anglers would stop fishing. If hatchery stocking was eliminated or decreased, 5% of the bait anglers and 4% of the lure anglers would stop fishing. The percent of fly anglers that would stop fishing, as a result of these changes, ranged between 1% and 3%.

North Fork Coeur d'Alene River-In the North Fork Coeur d'Alene River, responses by bait (19%), fly (44%), and lure (37%) anglers disagreed on several questions: Questions 3 and 4 pertaining to the expansion of the catch-and-release area; Question 7 pertaining to harvest; and Question 12 pertaining to stocked trout (Table 20). Bait and lure anglers did not want to expand the catch-and-release section while fly anglers were in favor of expansion (Table 20). Bait and lure anglers wanted to expand the harvest section while the fly anglers did not. Fly and lure anglers felt current regulations (6 trout, only one cutthroat must be over 355 mm) allowed enough harvest; bait anglers disagreed (Table 20). Bait and fly anglers felt hatchery trout were not as enjoyable to catch as wild trout; lure anglers disagreed.

Bait, fly, and lure anglers on the North Fork Coeur d'Alene River disagreed on the effects changes in fishery management would have on the amount of time spent fishing (Table 21). Bait anglers would decrease the amount of time fishing if harvest and the use of bait were eliminated (Table 21). Fly anglers would increase the amount of time spent fishing and lure anglers would increase or not change the amount of time spent fishing if these changes occurred. If hatchery trout stocking were decreased or eliminated, the amount of time spent fishing for bait, fly, and lure anglers would not change (Table 21). However, there was a mixed response to the elimination of stocking if return rates were less than 40% (Table 21).

Table 18. Summary of agreement or disagreement responses to selected questions from the Spokane River Drainage angler survey by anglers who fished the St. Joe River, Idaho, 1996. (* indicates a plurality).

	Bait	Fly	Lure	Section 1-3[1]	Section 4[2]	Total
Number of anglers	22	168	24	75	139	214
1. I feel it is important to allow catch-and-release fishing on a portion of the St. Joe River	Yes	Yes	Yes	Yes	Yes	Yes
2. I feel it is important to allow harvest fishing on a portion of the St. Joe River	Yes	Yes	Yes	Yes	Yes*	Yes
3. I would support expanding the catch-and-release section.	No*	Yes	Draw	Yes*	Yes	Yes
4. I would support expanding the harvest section.	No	No	No	No	No	No
5. I would prefer regulations that result in catching more fish but harvesting fewer fish.	No	Yes	Yes	Yes	Yes	Yes
6. I would prefer regulations that result in harvesting more fish now and less fish in the future.	No	No	No	No	No	No

Table 20. Summary of agreement or disagreement responses to selected questions from the Spokane River Drainage angler survey by anglers who fished the North Fork Coeur d'Alene River, Idaho, 1996. (* indicates a plurality).

	Bait	Fly	Lure	Section 1-4[1]	Section 5[2]	Total
Number of anglers	18	14	62	70	24	94
1. I feel it is important to allow catch-and-release fishing on a portion of the North Fork Coeur d'Alene River	Yes	Yes	Yes	Yes	Yes	Yes
2. I feel it is important to allow harvest fishing on a portion of the North Fork Coeur d'Alene River	Yes	Yes	Yes	Yes	Yes*	Yes
3. I would support expanding the catch-and-release section.	No	Yes	No	No*	Yes	Yes*
4. I would support expanding the harvest section.	Yes*	No	Yes*	No	No	No
5. I would prefer regulations that result in catching more fish but harvesting fewer fish.	Yes*	Yes	Yes	Yes	Yes	Yes

Table 20. Continued.

	Bait	Fly	Lure	Section 1-4[1]	Section 5[2]	Total
6. I would prefer regs. that result in harvesting more fish now and less fish in the future.	No	No	No	No	No	No
7. I feel current regs. allow me to keep enough fish.	Draw	Yes	Yes	Yes	Yes	Yes
8. I release most of the trout I catch.	Yes	Yes	Yes	Yes	Yes	Yes
9. I release all the trout I catch.	No	No*	No	No	Yes	No
10. I often keep all the trout I catch up to the legal limit.	No*	No	No	No	No	No
11. Catching a limit of trout is important to me.	No	No	No	No	No	No
12. I feel stocked trout are as enjoyable to catch as wild trout.	No*	No*	Yes	No*	No*	Draw
13. Fishing in stocked waters gives me a greater chance of catching trout.	Yes	Yes	Yes	Yes	Yes	Yes
14. Stocking is important to maintain good trout fishing.	Yes	Yes*	Yes	Yes	Yes*	Yes

[1]Number of bait anglers = 17, number of fly anglers = 40, number of lure anglers = 13
[2]Catch-and-release section. Number of bait anglers = 1, number of fly anglers = 1, number of lure anglers = 22.

Table 21. Summary of responses by anglers fishing in the North Fork Coeur d'Alene River, Idaho, to selected questions from the Spokane River drainage angler survey on how changes in fishery management would affect their quantity of fishing (increase, decrease, same, stop) in 1996. (* indicates a plurality).

	Bait	Fly	Lure	Section 1-4[1]	Section 5[2]	Total
Number of anglers	18	14	62	70	24	94
1. If the opportunity to keep fish was eliminated on the section of the North Fork Coeur d'Alene River between Lost and Yellow Dog creeks.	Decrease* Stop (33%)	Increase Stop (12%)	Same Stop (29%)	Same* Stop (23%)	Increase Stop (8%)	Same* Stop (20%)
2. If the opportunity to use bait was eliminated on the section of the North Fork Coeur d'Alene River between Lost and Yellow Dog creeks.	Decrease Stop (18%)	Same* Stop (0)	Same Stop (7%)	Increase Stop (1%)	Increase Stop (5%)	Same* Stop (9%)
3. If hatchery stocking was eliminated the section of the North Fork Coeur d'Alene River between Lost and Yellow Dog creeks.	Same Stop (5%)	Same Stop (2%)	Same Stop (7%)	Same Stop (4%)	Same Stop (0)	Same Stop (6%)
4. If hatchery stocking was decreased in the section of the North Fork Coeur d'Alene River between Lost and Yellow Dog creeks.	Same Stop (0)	Same Stop (3%)	Same Stop (0)	Same Stop (3%)	Same Stop (3%)	Same Stop (4%)

Table 21. Continued.

	Bait	Fly	Lure	Section 1-4[1]	Section 5[2]	Total
5. Would you support the elimination of hatchery stocking if return rates were less than 40%?	No	Yes	Draw	No	Yes	No
6. Would you support the elimination of hatchery stocking if the fish were put into streamside ponds?	No	No	No	No	No	No

[1]Number of bait anglers = 17, number of fly anglers = 40, number of lure anglers = 13
[2]Catch-and-release section. Number of bait anglers = 1, number of fly anglers = 1, number of lure anglers =22.

If the opportunity to harvest trout were eliminated, 33% of bait anglers, 29% of lure anglers and 12% of fly anglers would stop fishing. If the opportunity to use bait were eliminated, 18% of bait anglers and 7% of lure anglers would stop fishing. Three percent of fly anglers would stop fishing if hatchery stocking were decreased.

St. Joe River Regulation Modeling

Simulation 1-Catch-and-release-Catch-and-release regulations allowed the hypothetical population to reach its maximum potential abundance (Figure 30). At maximum abundance this population of mature cutthroat trout reached its maximum reproductive potential due to maximum egg production (Figure 31).

Simulation 2-Current regulations-Simulation 2 resulted in a 15% decline in abundance of trout 355 mm and longer when compared to the catch-and-release population (Figure 30). The decline occurred in the 355 mm and longer length group (Figure 32). Potential egg production declined 45% (Figure 31).

Simulation 3-Six trout, two cutthroat trout, must be 355 mm or longer-Simulation 3 resulted in a decrease of 17% in trout 355 mm and longer when compared to the catch-and-release simulation (Figure 30). The decline occurred in the 355 mm and longer length group (Figure 32). Egg production declined 48% (Figure 31).

Simulation 4-Two trout any length, wild trout regulation-Simulation 4 resulted in a 33% decline in trout abundance (Figure 30). There was a 99% reduction in cutthroat over 355 mm (Figure 32). Potential egg production declined 91% due to loss of mature trout (Figure 31).

Hatchery Trout Evaluation

The percentage of tags returned from hatchery trout stocked in the Moyie River, St. Maries River, and Big Creek, a tributary to the St. Joe River were 0.95%, 1.17% and 9.1% respectively (Table 22). Returns to the creel were inversely correlated with stream size, but we did not evaluate total angler effort to know if returns were also related to relative effort.

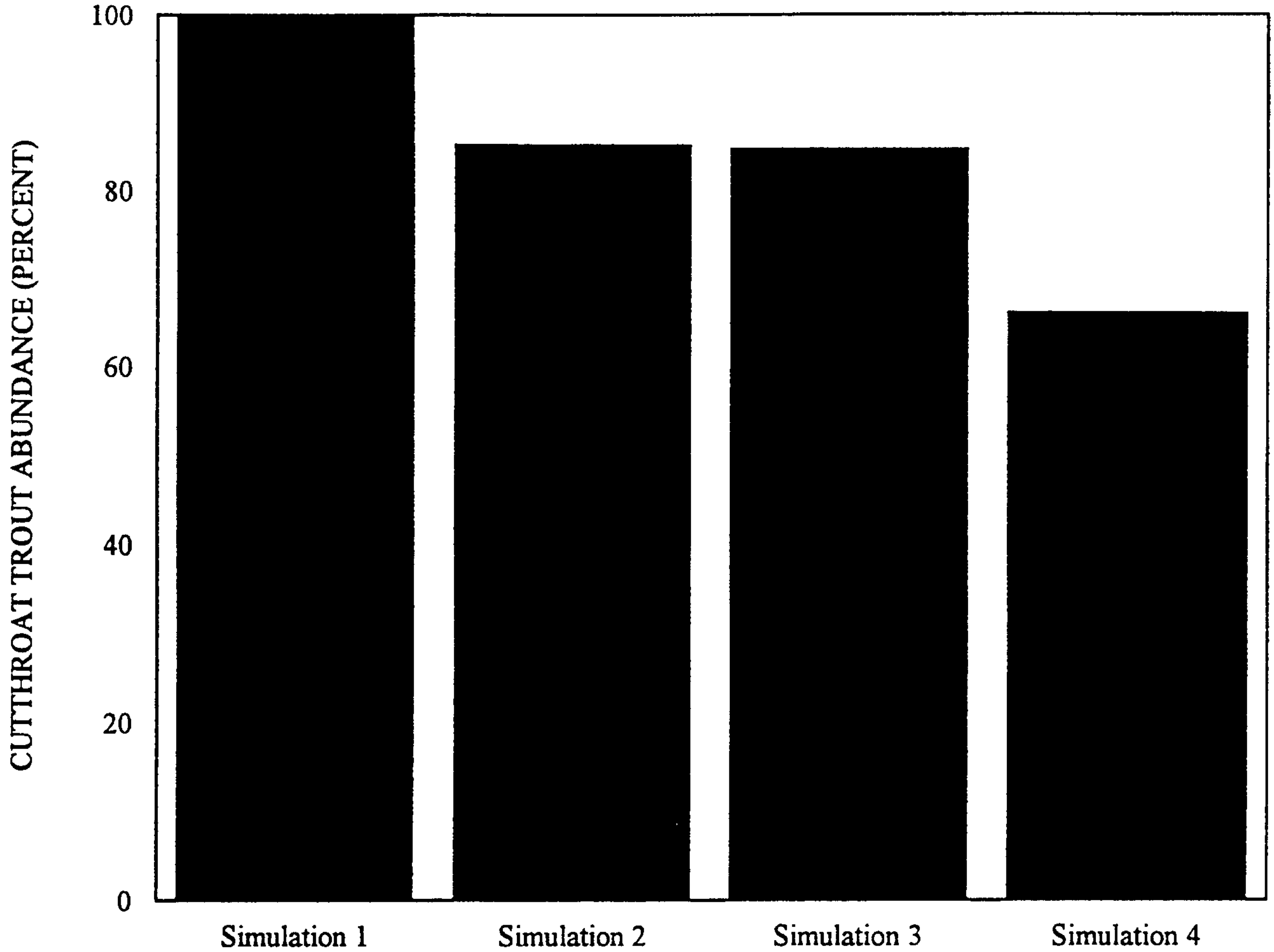


Figure 30. Relative abundance of a theoretical population of cutthroat trout managed under four different harvest regulations. (Simulation 1= catch-and-release; Simulation 2 = harvest 6 trout, only one cutthroat > 355 mm; Simulation 3 = harvest 6 trout, only two cutthroat > 355 mm; Simulation 4 = harvest two cutthroat any length).

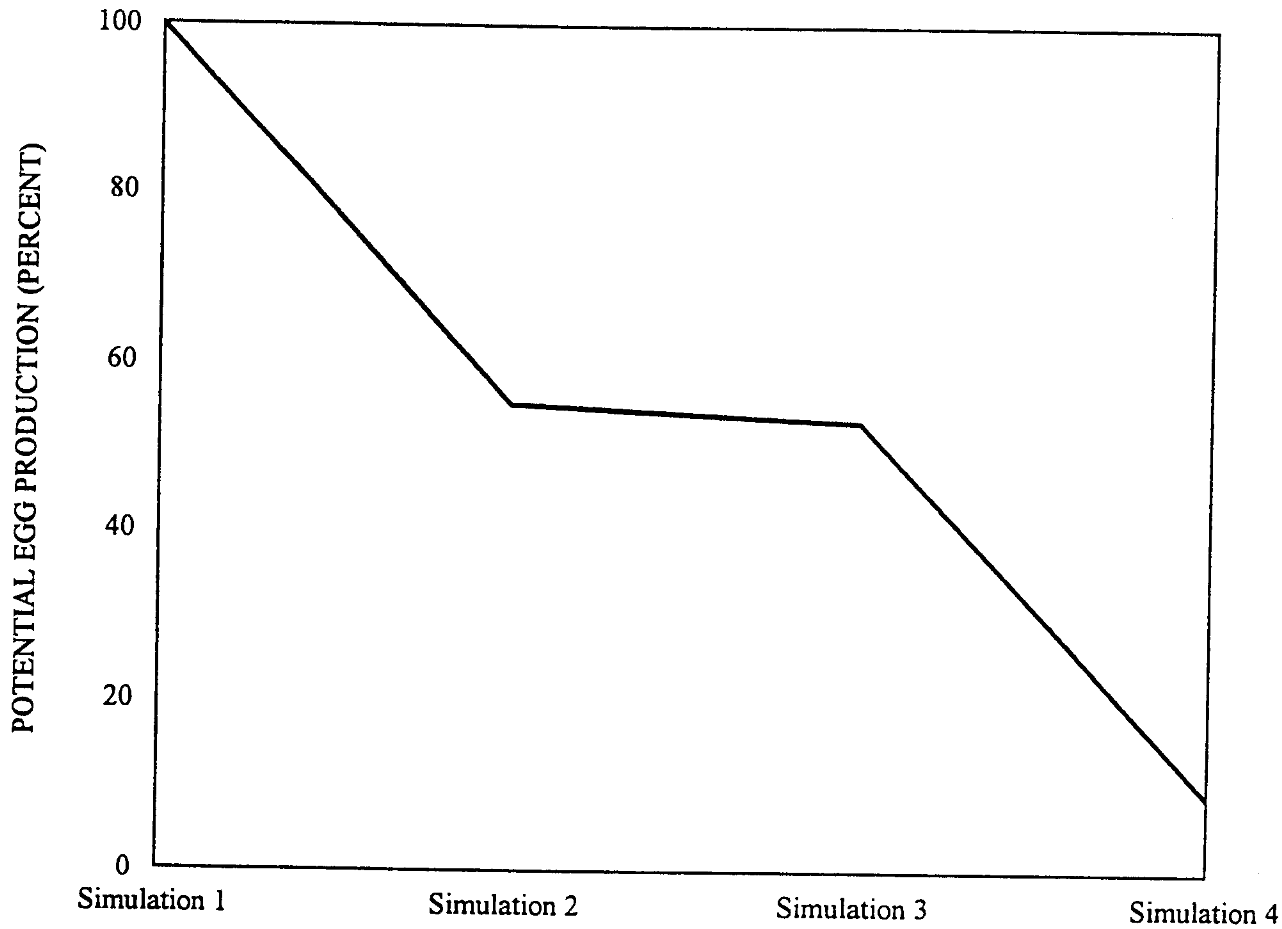


Figure 31. Relative reproductive potential (egg production) of a theoretical population of cutthroat trout managed under four different harvest regulations. (Simulation 1= catch-and-release; Simulation 2 = harvest 6 trout, only one cutthroat > 355 mm; Simulation 3 = Harvest 6 trout, two cutthroat > 355 mm; Simulation 4 = harvest two cutthroat any length).

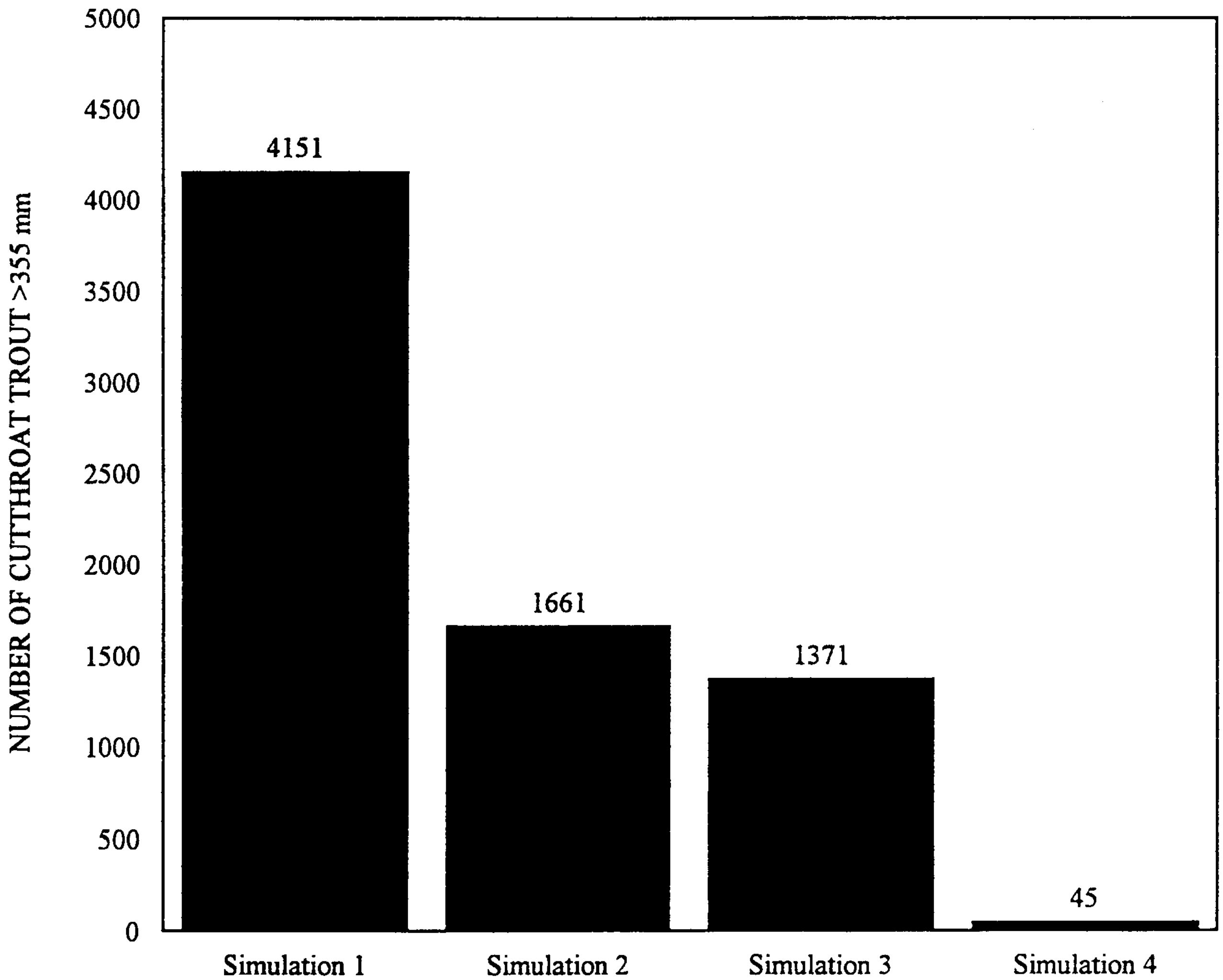


Figure 32. Number of cutthroat trout >355 mm and longer in the population predicted by MOCPOP 2.0 (Beamesder 1991). (Simulation 1= catch-and-release; Simulation 2 = harvest 6 trout, only one cutthroat > 355 mm; Simulation 3 = Harvest 6 trout, two cutthroat > 355 mm; Simulation 4 = harvest two cutthroat any length).

Table 22. Number of trout stocked, tagged and returned by anglers from the Moyie and St. Maries rivers and Big Creek (St. Joe River), Idaho, 1997.

Stocking location	Number planted	Number tagged	Mean length (mm)	Number returned	Percentage returned
Moyie River	6,427	634	236	6	0.95
St. Maries River	2,454	295	221	5	1.7
Big Creek	1,008	99	222	9	9.1

DISCUSSION

Large River Fish Population Evaluation

Westslope Cutthroat Trout Densities

The abundance of westslope cutthroat trout in the catch-and-release and harvest sections of the North Fork Coeur d'Alene River has benefitted from implementation of more restrictive harvest regulations in 1985 (Table 23, Figure 33). Current regulations require catch-and-release upstream from Yellow Dog Creek. Downstream from Yellow Dog Creek, the harvest limit for cutthroat trout is one, with a minimum length of 355 mm (Figure 1). Although the mean number of cutthroat per transect increased, the abundance of the cutthroat trout in the North Fork Coeur d'Alene River has not reached the same population levels as in the St. Joe River (Figure 34). Since 1990, the mean number of cutthroat trout per transect in the St. Joe River was almost twice as high as in the North Fork Coeur d'Alene River.

A major difference between the two systems is the amount of instream cover, such as deep pools and large woody debris, more commonly found in the St. Joe River. Bedload has filled in many pools in the North Fork Coeur d'Alene River, turning them into riffles or glides. In the North Fork Coeur d'Alene River, two transects in the roadless section between Teepee and Jordan creeks have been relocated due to bedload deposition creating shallow riffles in place of pools eliminating the transect all together. Flooding during the winter of 1995-96 and spring 1997 shifted large amounts of sediment. Some areas benefitted and others were degraded.

In the St. Joe River, there appears to be a downward trend in the mean number of cutthroat trout observed per transect in the harvest section from Prospector Creek downstream to Avery since 1993 ($P=0.0179$) based on the Wilcoxon signed-ranks test (Daniel 1990) (Figure 34). However, this same test indicated the 1997 density estimates in the catch-and-release section from Prospector Creek upstream to Ruby Creek were not significantly lower than the mean density estimates for 1993-96 (Table 24). The data set used for this analysis included four estimates plus 1997 data. Additional data sets are needed to strengthen the trend information.

Problems of habitat degradation are not restricted to the North Fork Coeur d'Alene River. The apparent declines in sections of the St. Joe River may be an indication that recruitment from spawning and rearing tributaries has been affected by habitat degradation. Several tributaries to the St. Joe River, including Bluff, Bird, Eagle, Fishhook and Prospector creeks have developed substantial gravel bars at the mouths. Flooding during the winter of 1995-96 and spring 1997 caused many unstable streams to transport large amounts of gravel into the St. Joe River. This gravel has begun to fill in pools (westslope cutthroat trout rearing and overwintering habitat). Two snorkeling transects (Skookum Cable and Prospector Creek) have been affected by increasing gravel deposition. This may be an indication that land management activities are affecting stream stability. However, at the mouths of stable tributaries, especially those in the section from Heller Creek upstream, gravel deposition appeared less substantial. Additional logging and road building in St. Joe River tributaries will likely result in habitat declines similar to the declines in the North Fork Coeur d'Alene River and a reduction in the trout population, despite restrictive regulations.

Table 23. Mean number of westslope cutthroat trout counted in snorkeling transects in the North Fork Coeur d'Alene River, Idaho, 1973, 1980-81, 1987-88, 1991, and 1993-1997.

	Year										
River section	1973[1]	1980[1]	1981[1]	1987[2]	1988[3]	1991[4]	1993[5]	1994	1995	1996	1997
Confluence of South Fork Cd'A River to Yellowdog Creek	2.4	0.5	0.9	--	1.4	7.5	22	15	18	10	11
Yellowdog to Tepee Creek	11.2	6.8	5.7	25.4	27.3	28.4	9	33	31	27	31
Tepee Creek to Jordan Creek	6.0[6]	5.6[6]	5.7[6]	16.4	3.2	1.5	2.7	11.8	4	16	16
Tepee Creek mouth to Independence Creek	0	1.6	3.9	2.2	1.2	2.6	3.2	2.0	1	0.4	10
Confluence of South Fork Cd'A River to Jordan Creek (including Tepee Creek)	4.6	3.2	3.4	--	10	8.6	14	15.5	15	13	16

[1]Average value for July, August and September sampling
[2]August sampling
[3]July 20-24 sampling
[4]August sampling
[5]July 18 - August 4 sampling
[6]Fish per transect calculated for Tepee Creek to Cow Creek

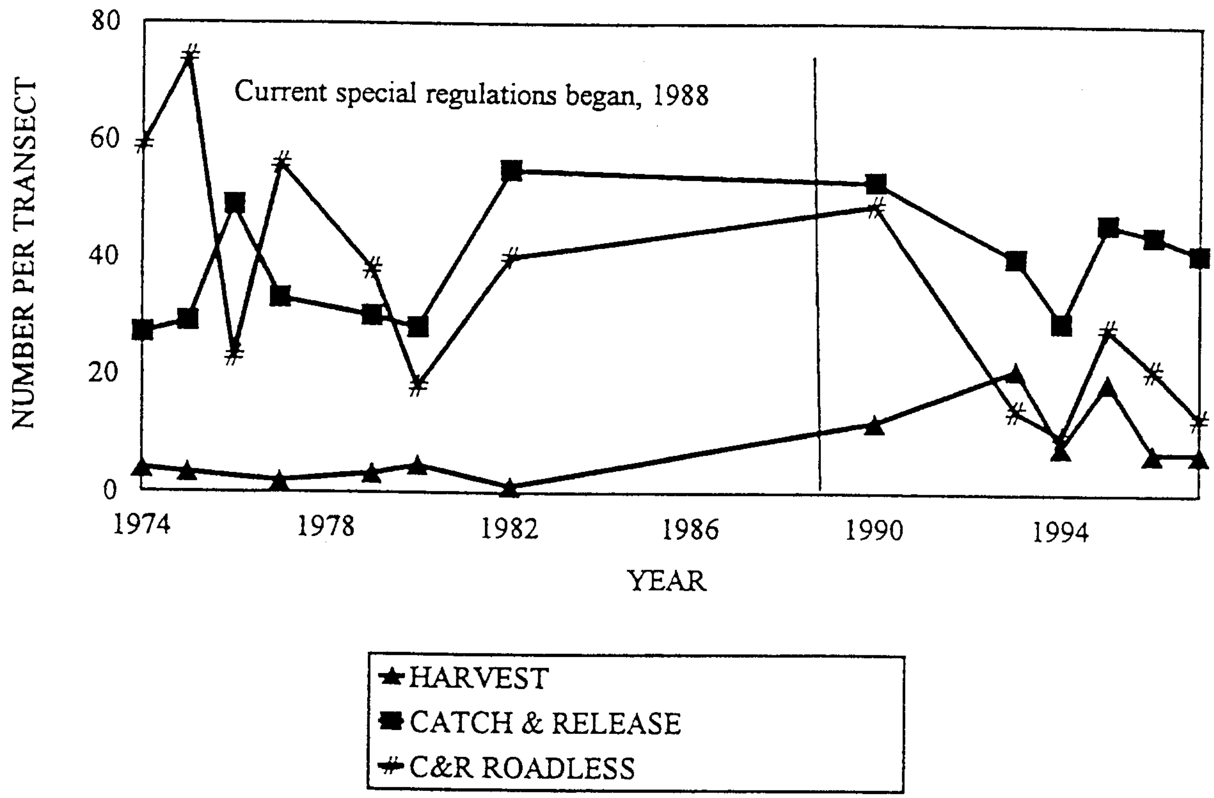


Figure 33. Mean number of westslope cutthroat trout observed per snorkeling transect in the North Fork Coeur d'Alene River catch-and-release section from Yellow Dog Creek upstream to Teepee Creek and in the harvest area from Yellow Dog Creek downstream to the confluence with the South Fork Coeur d'Alene River, Idaho, 1973 to 1997.

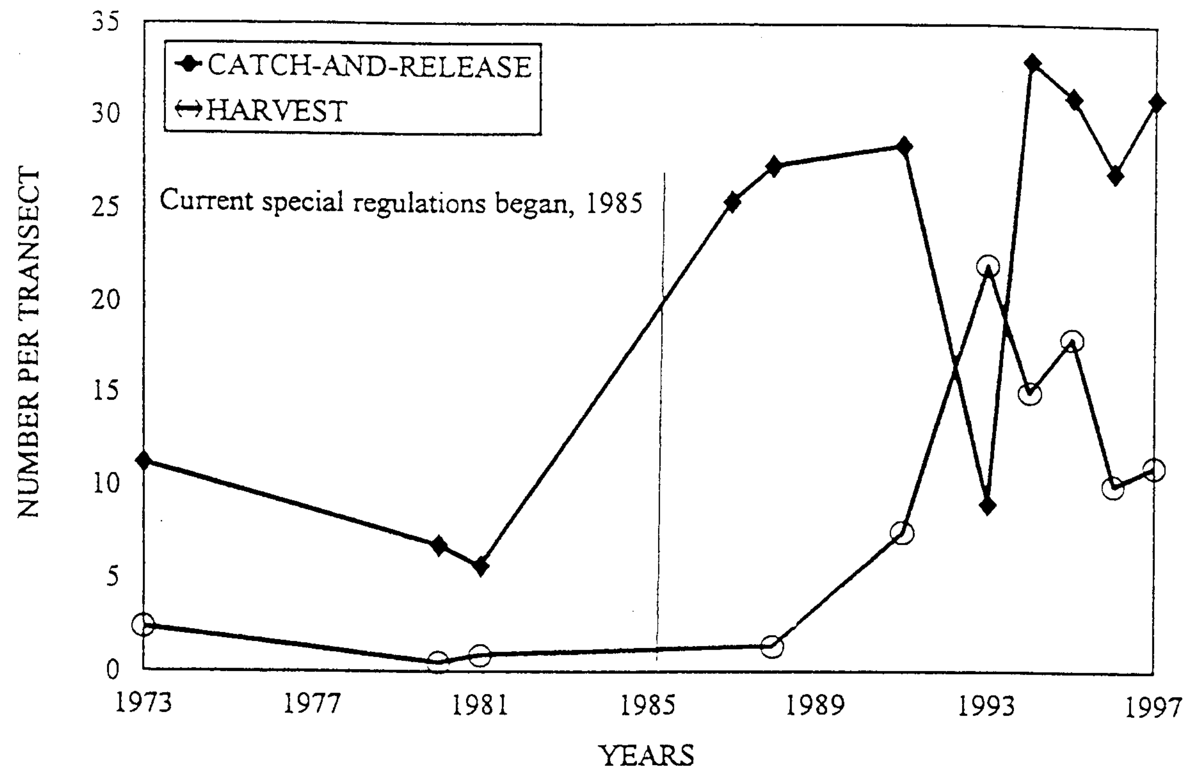


Figure 34. Mean number of westslope cutthroat trout observed per snorkeling transect in the harvest area, Avery upstream to Prospector Creek, and in the catch-and-release area from Prospector Creek upstream to Spruce Tree Campground, and the catch-and-release roadless area from Spruce Tree Campground to Ruby Creek, St. Joe River, Idaho, 1974 to 1997.

Table 24. Mean number of westslope cutthroat trout counted in snorkeling transects in the St. Joe River, Idaho, 1969-1977, 1979-1980, 1982, 1990, and 1993-1997.

	Year												
Stream section	1974	1975	1976	1977	1979	1980	1982	1990	1993	1994	1995	1996	1997
Prospector to Spruce Tree Campground	27.0	28.9	48.8	32.6	29.8	28.3	55.4	52.8	40.3	29.4	46.0	38.2	41.1
Spruce to Ruby Cr.	59.0	74	22.8	55.8	38.0	17.6	40.0	49.0	14.0	9.8	28.0	21.0	13.0
Prospector to Ruby Cr.	--	--	--	--	--	--	--	51.7	32.9	23.8	41.0	33.0	33.0
Calder to Avery	--	--	--	--	--	--	--	1.6	4.4	12.4	9.0	7.6	6.4
Avery to Prospector	4.0	3.4	--	2.0	3.3	4.7	1.1	12.0	21.3	7.7	19.0	7.4	5.1
Calder to Prospector Cr.	--	--	--	--	--	--	--	5.9	11.4	10.1	14.0	23.0	6.9
Calder to Ruby Cr.	--	--	--	--	--	--	--	35.0	24.3	18.3	30.0	28.0	22.6

[1]Average value for July, August and September sampling
[2]August sampling
[3]July 20-24 sampling
[4]August sampling
[5]July 18 - August 4 sampling
[6]Fish per transect calculated for Tepee Creek to Cow Creek

More restrictive fishing regulations implemented in 1985 on the Little North Fork Coeur d'Alene River appeared to have provided a slight increase in mean number of cutthroat per transect until 1988 (Figure 35). Since then, the number of fish per transect has declined (Table 25). Habitat degradation has severely limited cutthroat trout recruitment. The system is very unstable and large amounts of bedload are being transported downstream (U.S. Forest Service 1992). Flooding during the winter of 1995-96 and spring 1997 caused severe damage to unstable tributaries and the main river.

In 1997 and 1995, we did not observe any trout in the five snorkeling transects in the catch-and-release section of the Little North Fork Coeur d'Alene River. The mean number of cutthroat trout per transect for the catch-and-release section in 1996 (Figure 35) may have reflected movement of groups of fish within the system due to environmental factors such as water temperature or physical habitat changes. Panhandle National Forests fishery biologists observed westslope cutthroat trout in six transects between Hudlow and Lewelling creeks (upstream from our uppermost transect); densities ranged between 0.4 to 12.5 trout/100 m^2 (personal communication Ed Lider, Fisheries Zone Biologist).

The differences in cutthroat trout densities between the St. Joe River, Little North Fork Coeur d'Alene River, and North Fork Coeur d'Alene River appeared to be related to habitat quality. Cutthroat trout densities were greater where habitat quality appeared to be adequate, with better habitat generally supporting higher cutthroat trout densities. Where habitat quality appeared poor, cutthroat trout densities were low. The discrepancy between fish populations in the St. Joe River and North Fork Coeur d'Alene River indicates fishing regulations (i.e., catch-and-release) will not substantially improve cutthroat trout fisheries when trout habitat is poor.

Winter Habitat Assessment

Fluvial westslope cutthroat trout typically migrate downstream to overwinter in deep pools with low water velocities. In 1997, westslope cutthroat trout in the St. Joe River migrated downstream to deep pools to overwinter. Hunt and Bjornn (1992) reported a similar migration pattern in the St. Joe River in November 1989. Our study failed to locate exactly where these cutthroat trout were residing. Cutthroat trout were suspected to overwinter between Prospector Creek and Avery, Idaho (Figure 2).

Ice formation and poor visibility in key areas prevented the observation of cutthroat trout by snorkeling during November, December, and January. Other methods (i.e., radio telemetry) may be needed to define specific wintering habitat areas for westslope cutthroat trout in the St. Joe River.

Little North Fork Clearwater River

The Little North Fork Clearwater River is a tributary to the North Fork Clearwater River. It drains approximately 60,800 ha, of which an estimated 59,927 ha are in the Panhandle Region, from the confluence with Foehl Creek, upstream to the headwaters (Figure 3).

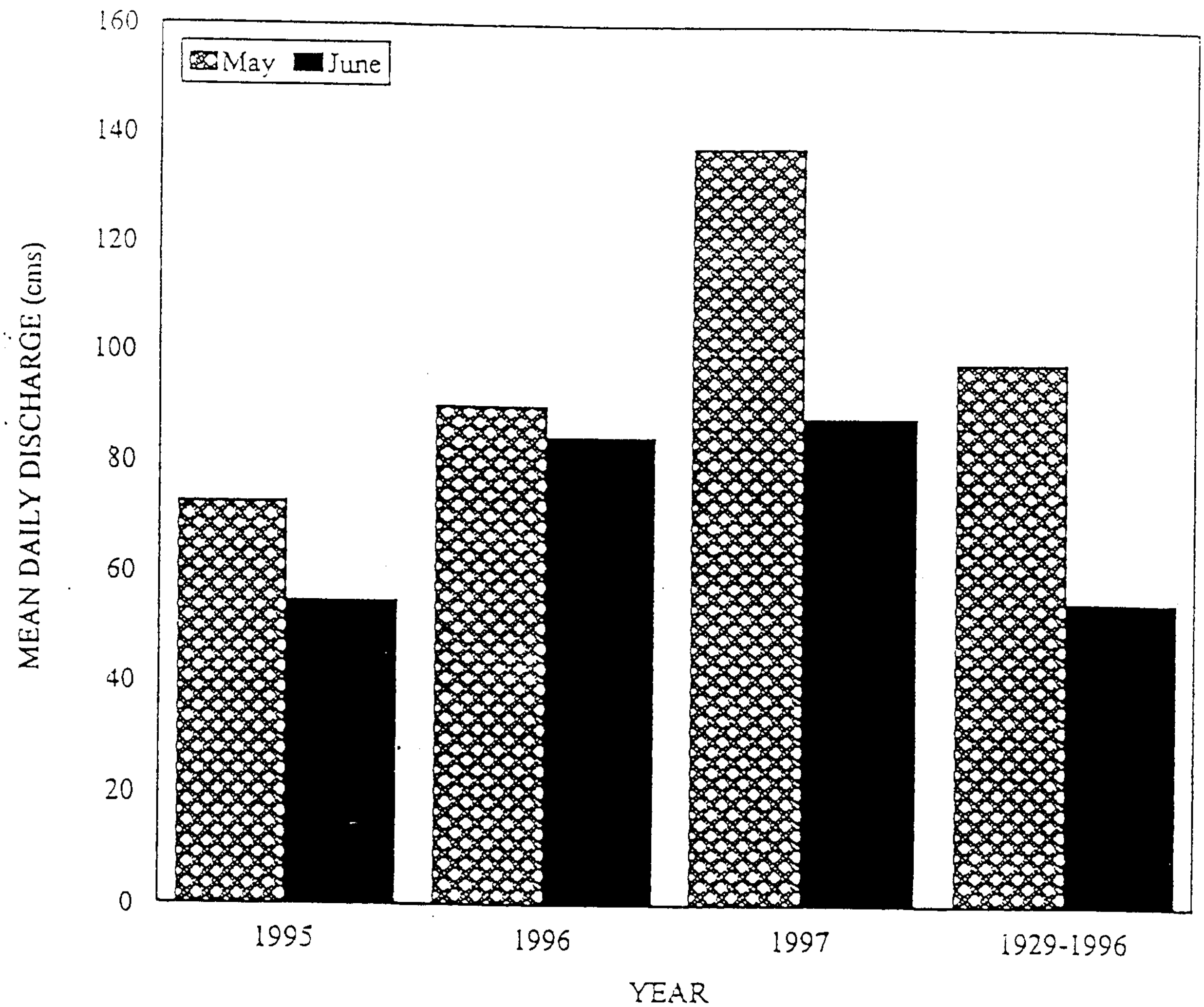


Figure 35. Mean number of westslope cutthroat trout observed per snorkeling transect in the Little North Fork Coeur d'Alene River catch-and-release area, Laverne Creek upstream to Deception Creek and in the harvest area from Laverne Creek downstream to the confluence with the North Fork Coeur d'Alene River, Idaho, 1980 to 1997.

Table 25. Mean number of westslope cutthroat trout counted in snorkeling transects in the Little North Fork Coeur d'Alene River, Idaho, for 1973, 1980-1981, 1988, 1991, and 1993-1997.

	Year									
River section	1973	1980	1981	1988[2]	1991[3]	1993[4]	1994	1995	1996	1997
Mouth to Horse Heaven (7&8)	5.6[1]	5.9[1]	7.5[1]	2.7	3.9	3.8	2.1	0.6	3.6	2.1
Mouth to Laverne Creek (7)	--	--	0.8[5]	1.0	3.3	3.3	0.6	0.9	1.5	2.1
Laverne to Deception Cr. (8)	--	--	3.8[5,6]	7.4[6]	1.5	0.5	4.0	0	13.5	0
Deception to Horse Heaven(8)	--	--	--	--	5.3	--	4.7	0.7	2.7	0

[1]Average value for July, August and September sampling.
[2]July 20 sampling.
[3]August 21-25 sampling.
[4]July 29 sampling.
[5]Average value for 1980-1981.
[6]Densities from transects from Laverne Creek to Iron Creek.

Native game fish include westslope cutthroat trout, bull trout, and mountain whitefish. Anadromous steelhead and chinook salmon were also present before the construction of Dworshak Dam in 1973 at the mouth of the North Fork Clearwater River. Residual steelhead are still present in the Little North Fork Clearwater River. Introduced brook trout are also present in some tributaries (Davis and Horner 1995).

Access to the Little North Fork Clearwater River is limited. The section upstream from Adair Creek is accessible through FS Road 760. The remainder of the Little North Fork Clearwater River is accessible by trail. A road in the Montana Creek drainage comes within 1.6 km of the river and provides access to the middle part of the river.

The Little North Fork Clearwater River fishery is managed as a "wild trout" fishery. The daily bag and possession limit is two trout. No minimum length is required.

Trout densities in the Little North Fork Clearwater River sections 2-5 were lower than in the catch-and-release section of the St. Joe River, but higher than the harvest section of the St. Joe River (Table 26). The densities of trout longer than 300 mm were similar in the Little North Fork Clearwater River and in the St. Joe River catch-and-release section (Figure 36). Even though total trout densities for the Little North Fork Clearwater River and the St. Joe River catch-and-release section were different, the similarity of densities for trout over 300 mm suggest the Little North Fork Clearwater River fishery is healthy. The difference in total densities between the Little North Fork Clearwater River and the St. Joe River catch-and-release section may be related to the lower productivity in the Little North Fork Clearwater River, evidenced by the lower amounts of periphyton on the substrate than observed in the St. Joe River. Geology of the Little North Fork Clearwater River drainage is dominated by granitics which results in low productivity water. The St. Joe River drainage is dominated by belt geology which is generally more productive than granitic geology. The higher percentage of trout greater than 300 mm, relative to the total population in that river observed by snorkeling, in the Little North Fork Clearwater River (15%) compared with the St. Joe River catch-and-release section (9%), suggests exploitation in the Little North Fork Clearwater River was currently low. We expect to have an estimate of exploitation in the Little North Fork Clearwater River by the end of the 1998 fishing season.

In 1988, a fish population survey was conducted on the section of the Little North Fork Clearwater River between Foehl Creek and Larkins Creek in the Panhandle Region (the section from Foehl Creek to Minnesaka Creek in the Clearwater Region was also surveyed). Department personnel surveyed 11 study reaches and the density of trout less than 300 mm was 0.72 trout/100 m^2 and the density for trout longer than 300 mm was 0.3 trout/100 m^2 (Horner et al. 1988). In 1997, we surveyed three reaches between Foehl Creek and Larkins Creek. The density of trout less than 300 mm was 0.12 trout/100 m^2 and the density for trout longer than 300 mm was 0.12 trout/100 m^2. The differences in densities between 1988 and 1997 may be attributed to fewer reaches surveyed in 1997 and the random distribution of trout in the river. However, the percentage of trout over 300 mm was higher in 1997 (50%) than in 1988 (29%); three trout over 300 mm were counted in the three study reaches in 1997 and 19 trout over 300 mm were counted in the 11 reaches in 1988. If all the data from the reaches surveyed in Section 5 during 1997 were combined, then the densities of trout less than 300 mm (0.21 trout/100m^2, 21 trout were counted) and trout longer than 300 mm (0.13 trout/100 m^2, 13 trout were counted) had a similar relationship to the 1988 data, as did the data from the three reaches. The difference in the percentage of large trout suggests exploitation was very low in 1997. The apparent lower exploitation may be due to changes in harvest regulations. Prior to 1992, fishing regulations on the Little North Fork Clearwater River included a season restriction (Memorial Day weekend to September 10) and a harvest quota (three trout per day). In 1992 fishing regulations changed. The fishing season was extended to November 30 (general statewide stream closure date), and the harvest quota was reduced (two trout per day). The river is now managed as a 'wild trout' stream which allows a limited harvest opportunity on wild trout.

Table 26. Summary of population estimates and density estimates for trout captured by electrofishing in the Little North Fork Clearwater (LNFCR), St. Joe River catch-and-release section (SJ C&R) and the St. Joe River harvest section (SJ harvest), Idaho, in 1997, 1995 and 1996.

River	Number of trout			Density of trout (per 100 m^2)		
	Total number	< 300 mm	>300 mm	Total number	<300 mm	>300 mm
LNFCR	242	205	37	0.90	0.78	0.12
SJ C&R	681	621	60	1.75	1.60	0.15
SJ Harvest	114	112	2	0.19	0.18	0.01

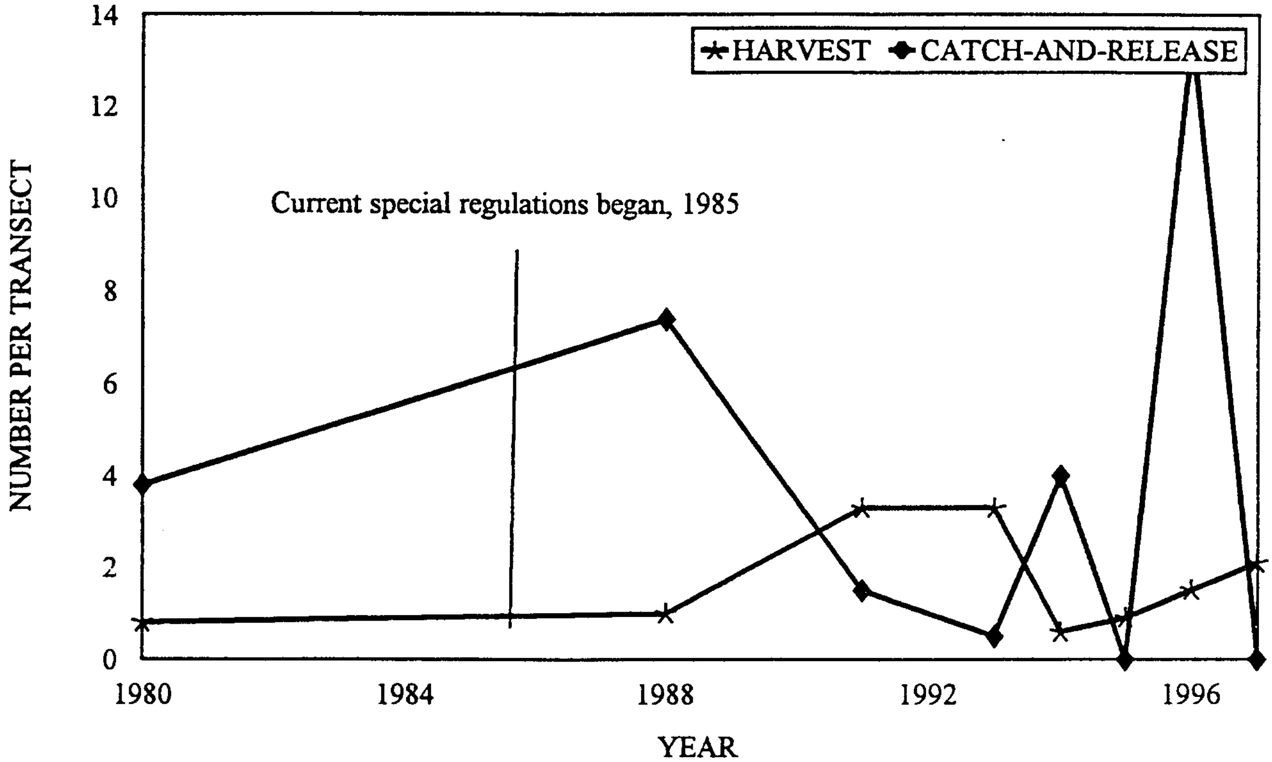


Figure 36. Density (trout/100 m^2) of trout observed by snorkeling in the St. Joe and Little North Fork Clearwater rivers, Idaho, August 1997.

The regulation change appears to have resulted in an increase in trout longer than 300 mm. The total density in Section 5 in 1997 (0.3 trout/100m^2) was about three times lower than total density in 1988 (1.0 trout/100m^2). Low visibility may have affected the number of trout observed. A greater number of trout were caught by hook and line than observed by snorkeling.

The population density estimate for the Little North Fork Clearwater River Section 1 in 1997 (520 trout/ha) was higher than the St. Joe River catch-and-release section in 1995 (318 trout/ha) and the St. Joe River harvest section in 1996 (25 trout/ha). Although the number of trout/ha in Section 1 of the Little North Fork Clearwater River may be greater than in the St. Joe River catch-and-release section, the number of trout over 300 mm/ha was much greater in the St. Joe River catch-and-release section (102 trout/ha) and harvest section (8.4 trout/ha) than in Section 1 of the Little North Fork Clearwater River (0 trout/ha). The lack of trout longer than 300 mm in Section 1 of the Little North Fork Clearwater River may be an indication of heavy exploitation in this area (accessible by road), or a population dominated by juvenile fish or resident fish.

In Sections 4 and 5, relative abundance of cutthroat and rainbow trout observed by snorkeling was reflected in the angling catch (Table 27). However, in Section 3 more cutthroat trout were caught angling than were observed snorkeling. In Section 2, only cutthroat trout were caught despite an equal number of rainbow and cutthroat trout observed snorkeling. Angling should not be used as the only source of data for species composition. Species in low abundance, i.e., bull trout, may not be caught. Angling may not be a good indicator of relative abundance because vulnerability varies among trout species and may affect total catch (MacPhee 1966). Length of trout can more accurately be determined from angled fish than those observed by snorkeling.

The Little North Fork Clearwater River is a remote stream that provides an opportunity for solitude while fishing. Fishing effort in the Little North Fork Clearwater River will probably increase as the demand for solitude and fishing 'less crowded' areas increases. Increased fishing effort will probably lead to increased harvest and this could lead to a reduction in trout abundance. When fishing effort increased in the St. Joe River during the 1980s, harvest restrictions were needed to provide a quality fishery. In the future, harvest restrictions may be necessary in the Little North Fork Clearwater River to protect and provide a quality fishing experience.

Tributaries - Population estimates for surveyed tributaries in Little North Fork Clearwater River (Table 9) were generally lower than estimates for tributaries in other Panhandle Region drainages (Appendix O). Low population estimates may be due to low productivity, as evidenced by low amounts of periphyton on substrate.

Most of the trout caught in the tributaries were less than 200 mm. This was expected as westslope cutthroat trout typically remain in spawning streams for one to four years before moving downstream to rearing areas. Juvenile westslope cutthroat trout usually migrate downstream between 100 mm to 250 mm (Lukens 1978, Behnke 1979). Surveyed tributaries in the Little North Fork Clearwater River were generally high gradient and low productivity. A habitat survey indicated the percentage of riffle habitat in Lund, Little Lost Lake and Lost Lake creeks was over 70% and that pool habitat (trout rearing habitat) was less than 18% (Horner et al. F-71-R-19, in progress). The lack of rearing habitat may have resulted in most of the larger trout moving downstream to suitable habitat. Length frequency data suggested only two age classes of the trout in the tributaries (Figures 13-14).

Table 27. Comparison of cutthroat (CT) and rainbow (RB) trout observed by snorkeling and caught by angling in the Little North Fork Clearwater River, Idaho, August 1997.

	Section 2		Section 3		Section 4		Section 5		Total	
	RB	CT	RB	CT	RB	CT	RB	CT	RB	CT
Snorkel	20	20	84	32	22	27	10	24	136	103
Angling	0	12	46	56	7	14	7	36	60	118

The number of hybrid trout seemed to be higher than expected especially when no rainbow trout were captured. It is unclear why this occurred. Misidentification may be one cause for the high number of hybrid trout in the tributaries.

Bull Trout-Bull trout are present in the Little North Fork Clearwater River drainage. Adult bull trout probably migrate from Dworshak Reservoir and mainstem river reaches of the North Fork Clearwater River system to spawn in headwater and tributary reaches, including the Little North Fork Clearwater River. Two adult bull trout were observed while snorkeling the Little North Fork Clearwater River, one each in Sections 3 and 4. Bull trout, especially juveniles, hide during the day under rocks and in woody debris piles and may be difficult to see while snorkeling (Pratt 1984). While electrofishing in Section 1, 72 bull trout were captured. Most of these fish were juveniles and were found hiding under rocks, but two adults were also caught (Figure 11).

Bull trout abundance in the upper Little North Fork Clearwater River tributaries was low. In the surveyed tributaries, nine bull trout were captured in Lund Creek, one bull trout was captured in Little Lost Lake Creek, and one bull trout was captured in the Little North Fork Clearwater River upstream from Lost Lake Creek. Study reach selection and high discharge may have influenced electrofishing results. Watson and Hillman (1997) reported the presence of bull trout in several Little North Fork Clearwater River tributaries including Lost Lake Creek. We did not find any bull trout in Lost Lake Creek in 1997, indicating bull trout abundance may be low. Our sampling effort was not as intensive as described by Watson and Hillman (1997). Rieman and McIntyre (1995) reported bull trout abundance and cooler water temperature was correlated with available habitat above 1,600 m elevation in the Boise River drainage. Most of the upper Little North Fork Clearwater River drainage is below 1,600 m elevation, suggesting increasing latitude compensates for lower elevation providing habitat with suitable water temperatures.

Physical habitat also affects bull trout abundance (Pratt 1984). Bull trout prefer coldwater streams. Goetz (1989) suggested the optimum water temperatures for rearing were 7° - 8°C. High gradient and woody debris appear to be important to bull trout distribution (Pratt 1984); Rieman and McIntyre (1995) suggested gradient was not a significant factor in bull trout distribution. Watson and Hillman (1997) and Rieman and McIntyre (1995) present discussions of physical habitat factors affecting bull trout distribution. The tributaries in the upper Little North Fork Clearwater River have gradients between 2.3% - 5.7%, water temperatures between 6°- 9°C, and very little woody debris (Horner et al F-71-R-19, in progress).

Although conditions in the upper Little North Fork Clearwater River drainage may not be characteristic of the typical bull trout stream, bull trout are present in the drainage. A combination of water temperature, determined by elevation and latitude, and habitat factors appears to affect bull trout distribution. Land management activities such as timber harvest may adversely affect bull trout abundance by removing the overstory and exposing the stream to solar radiation, warming water temperatures. Sediment producing road construction and/or failures, and hydrologic changes can also have a significant negative impact on bull trout, which are sensitive to sedimentation and midwinter flooding (Rieman and McIntyre 1995) as evidenced by the amount a fine sediment in Adair and Jungle creeks.

<u>Small Stream Surveys</u>

Distribution

Westslope cutthroat trout and bull trout are the only trout and char native to the Pend Oreille Lake basin. Rainbow trout were introduced in 1942 and brook trout were most likely introduced to the drainage in the 1940s or early 1950s (Pratt 1984).

Distribution of the westslope cutthroat, bull, brook and rainbow trout were similar to distribution described by Pratt (1984). However, Pratt (1984) observed brook trout not only in Porcupine and Twin creeks, but also in Lightning, East Fork Lightning, and Wellington creeks. It is uncertain if brook trout no longer occur in Lightning, East Fork Lightning, and Wellington Creeks or if sampling effort failed to capture any brook trout due to low abundance. However, our sampling intensity, which was similar to that of Watson and Hillman (1997), had a high likelihood of detecting brook trout if they were present.

Generally, rainbow, westslope cutthroat trout, and bull trout occurred in many of the same sampling sites (Table 11). The only sites where bull trout did not reside with westslope cutthroat trout were upstream from migration barriers.

Abundance and Structure

In this study, abundance estimates for the single-pass sampling sites may be biased by the low number of multiple-pass sampling sites used to develop the regression equations. Labon-Cervia and Utrilla (1993) used 166 samples to develop their regression equation. They recommended using a reasonably large sample set to establish the relationship between first pass and population estimates.

In our study, time constraints prevented us from completing more multiple-pass estimates. In some cases multiple-pass data could not be used because the number of individuals captured per pass increased in each consecutive pass instead of decreasing. For cutthroat trout, two out of 11 two-pass estimates could not be used and one out of eight bull trout two-pass estimates could not be used. This may indicate some of the cutthroat and bull trout one-pass estimates underestimated the population abundance. The need for a usable estimator of single-pass electrofishing is obvious. Gathering more sample sites to reduce bias and produce a more reliable regression equation would improve the validity of results.

<u>Westslope Cutthroat Trout</u>-Mean densities of westslope cutthroat trout in streams surveyed in 1997 by snorkeling were similar to densities reported by Pratt (1984, 1985) and Hoelscher and Bjornn (1987, 1989).

The length range of westslope cutthroat trout captured in the surveyed streams (Figure 26) was typical of adfluvial westslope cutthroat trout (Pratt 1984, Lukens 1978, Lewynsky 1986). The 1997 length frequency probably represented Age-1 to Age-3 cutthroat trout (Lukens 1978, Lewynsky 1986). Pratt (1984) reported westslope cutthroat trout from the Lightning Creek drainage migrated at age-1 or age-2 resulting in very few westslope cutthroat trout greater than 200 mm in the system. The 1997 length frequency shows very few cutthroat trout greater than 200 mm (Figure 14).

Bull Trout-In 1997, mean densities of bull trout, determined by electrofishing, in five surveyed streams (East Fork Lightning, Porcupine, Wellington, Rattle and Twin creeks) were less than densities determined by snorkeling, reported by Pratt (1984). Observing bull trout by daytime snorkeling is difficult and could lead to an underestimate of the relative abundance (Thurow 1996). With this in mind, the lower electrofishing densities in 1997 probably represented a decline in abundance. However, density estimates in Savage and Trestle creeks were higher in 1997 (1.8 and 4.2 bull trout/100 m^2) than in 1984 (0.4 and 1.5 bull trout/100 m^2) which is expected when comparing daytime snorkeling estimates to electrofishing estimates.

Bull trout length frequency (Figure 27) probably represented age 0-3 juveniles. Pratt (1984) reported backcalculated mean lengths for age-1 (91 mm), age-2 (166 mm), and age-3 (276 mm) bull trout which were similar to the 1997 length frequency (Figure 27).

In 1996, IDFG personnel surveyed several small streams in the Lake Pend Oreille drainage to assess the effects of the 1995-1996 winter floods on juvenile bull trout abundance especially age-0 (Fredericks et al. F-71-R-21, in progress). The hypothesis was the 1995-1996 floods may have destroyed bull trout eggs while in the gravel. Very few age-0 bull trout were captured indicating that the floods had an affect on abundance. In 1997, we captured what appeared to be several age-1 bull trout indicating the 1995-1996 floods may not have had as severe affect on the 1995 year-class of bull trout as originally hypothesized (Figure 27). However, the 1995 year-class abundance does appear to be depressed. Age-2 bull trout were more abundant than age-1 bull trout, which can be interpreted from the length frequency histogram in Figure 38. In a normal age frequency distribution, age-2 trout are typically less abundant than age-1 trout. In 1997, age-2 bull trout appear to be more abundant than age-1 bull trout.

In 1997, age-1 bull trout were more abundant than in 1994 or 1996. Sampling intensity was much greater in 1997 than in either 1994 or 1996 and may account for the higher number of age-1 bull trout captured.

Rainbow Trout-There are no direct comparisons of the 1997 rainbow trout abundance estimates in Lightning Creek. However, Grouse Creek and Lightning Creek have similar geology and have suffered similar habitat degradations since 1984. Electrofishing abundance estimates for rainbow trout in Lightning Creek in 1997 (2.8 and 6.8 trout/100 m^2) were much lower than snorkeling densities in Grouse Creek (18.9 to 67.2 trout/100 m^2) in 1984 (Pratt 1984). This difference suggests rainbow trout abundance in Lightning Creek may have been much greater in 1984 than in 1997.

The length frequency of rainbow trout in 1997 (Figure 28) was similar to the length frequency reported by Irving (1986). Irving reported that his length frequency represented rainbow trout age-0 to age-3.

Bull Trout Spawning Survey

Spawning escapements for bull trout in the surveyed watersheds in northern Idaho were lower in 1997 than in 1996. Bull trout redd totals counted in 1997 may have been influenced by the prolonged high discharge resulting from a deep snowpack. Snowpack in the Pend Oreille River, Priest River, St. Joe River, and North Fork Clearwater River drainages all averaged over 200% of normal in January 1997. Snow pack in the Lightning Creek drainage was 192% in January 1997. Water content in 1997 was approximately twice the 10-year average according to Snotel gage sites.

Pend Oreille Lake Drainage-Even though weather may have affected total number of bull trout redds observed in 1997, the number of bull trout redds in the Pend Oreille Lake drainage has been declining since 1983 (Figure 39). Data indicate a statistically significant (linear regression, slope =-2.347; P=0.041) downward trend since 1983. Even the bull trout harvest closure on Pend Oreille Lake in 1996 did not appear to provide a significant increase in the number of returning adult bull trout, as was expected.

Upper Priest Lake Drainage-Lake trout were intentionally introduced into Priest Lake in 1925. Priest Lake is the third largest natural lake in Idaho, its depth and bottom contour seem to favor lake trout. Introduction of mysis *Mysis relicta* filled a food niche that favored lake trout and may have helped lake trout out compete bull trout. Bull trout abundance in Priest Lake is very low. Stream surveys in several Priest Lake tributaries in 1994 did not locate any juvenile bull trout where bull trout were once present (Horner et al., F-71-R-19, in progress). Bull trout are more abundant in Upper Priest Lake.

Lake trout have moved through the Thorofare (narrow stretch between Priest Lake and Upper Priest Lake) and are now established in Upper Priest Lake. Lake trout pose the same threat to bull trout in Upper Priest Lake as they do in Priest Lake. A study on the abundance of lake trout and bull trout in Upper Priest Lake began in 1997. Preliminary data indicated lake trout migrate from Upper Priest Lake into Priest Lake (personal comment Fredericks; see Lowland Lakes section).

St. Joe River Drainage-The bull trout population in the St. Joe River system is the only known one remaining in the Spokane River drainage. However, population numbers, based on redd counts, are very low when compared to the Lake Pend Oreille drainage bull trout population. Spawning activity is primarily confined to the upper reaches of the St. Joe River basin, where very little logging has occurred and road densities are low. The decline in bull trout redds in 1997 may be caused by fluctuations in spawning escapement common to populations with low abundance (Reiman and McIntyre 1995). Continued redd surveys will help determine if the low count in 1997 represents a true decline in bull trout abundance.

Little North Fork Clearwater River Drainage-Redd detection in the Little North Fork Clearwater River drainage can be very difficult for observers. There is typically very little periphyton on the substrate so 'cleaned' gravel associated with redd construction in the fall could not be used to identify redds. Other factors such as substrate orientation and classic redd construction patterns, i.e., a depression followed by a mound of loose gravel, had to be used to locate redds. Higher flows due to rainy weather during the survey period may have affected these traits by rearranging substrate, filling in depressions and flattening mounds. The lack of bull trout redds observed may be caused by the low density of adult bull trout in the watershed.

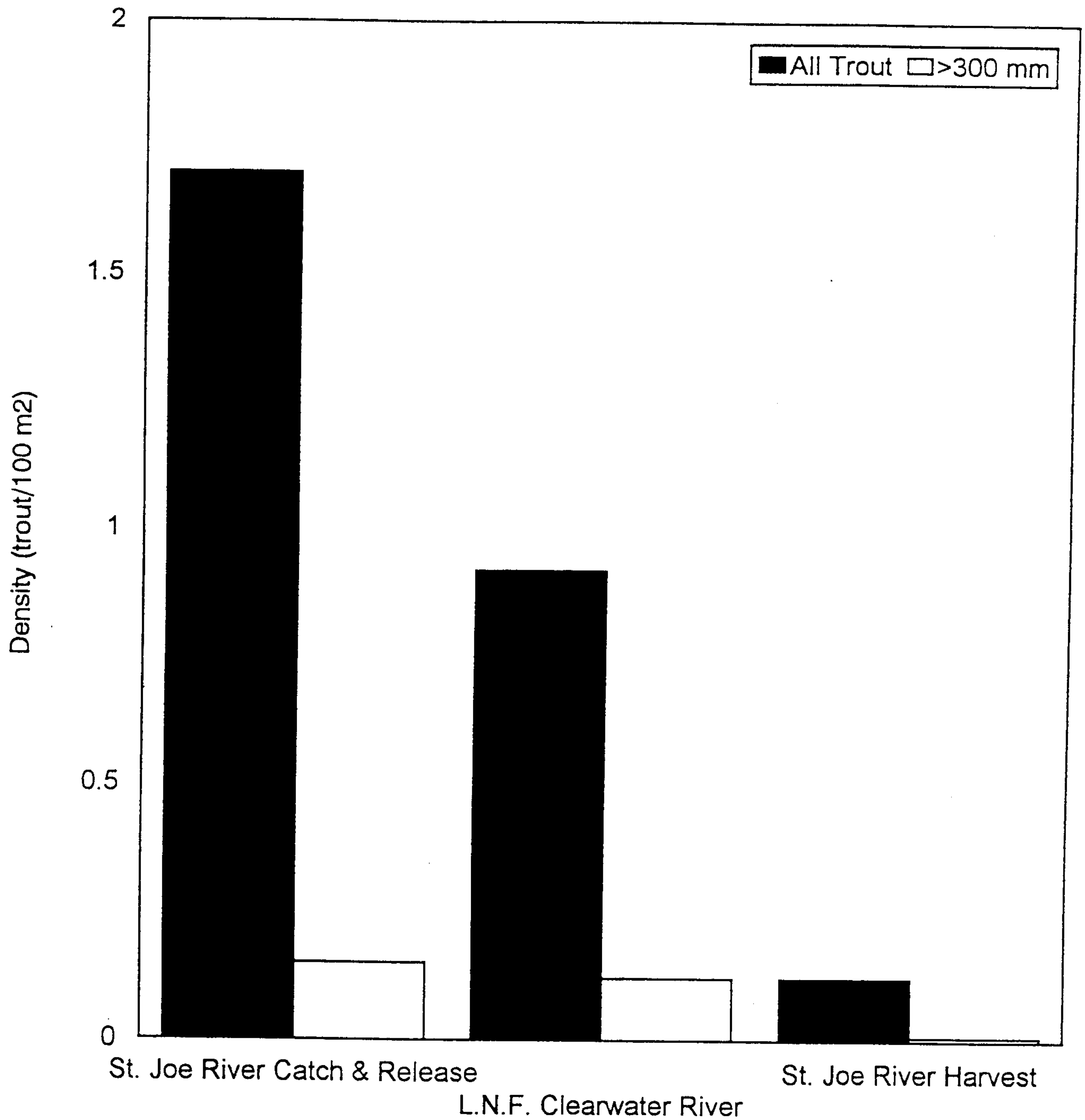


Figure 37. Comparison of length frequencies of juvenile bull trout captured by electrofishing from sampled tributaries to Lightning Creek, Pend Oreille Lake drainage, Idaho, 1994, 1996, and 1997.

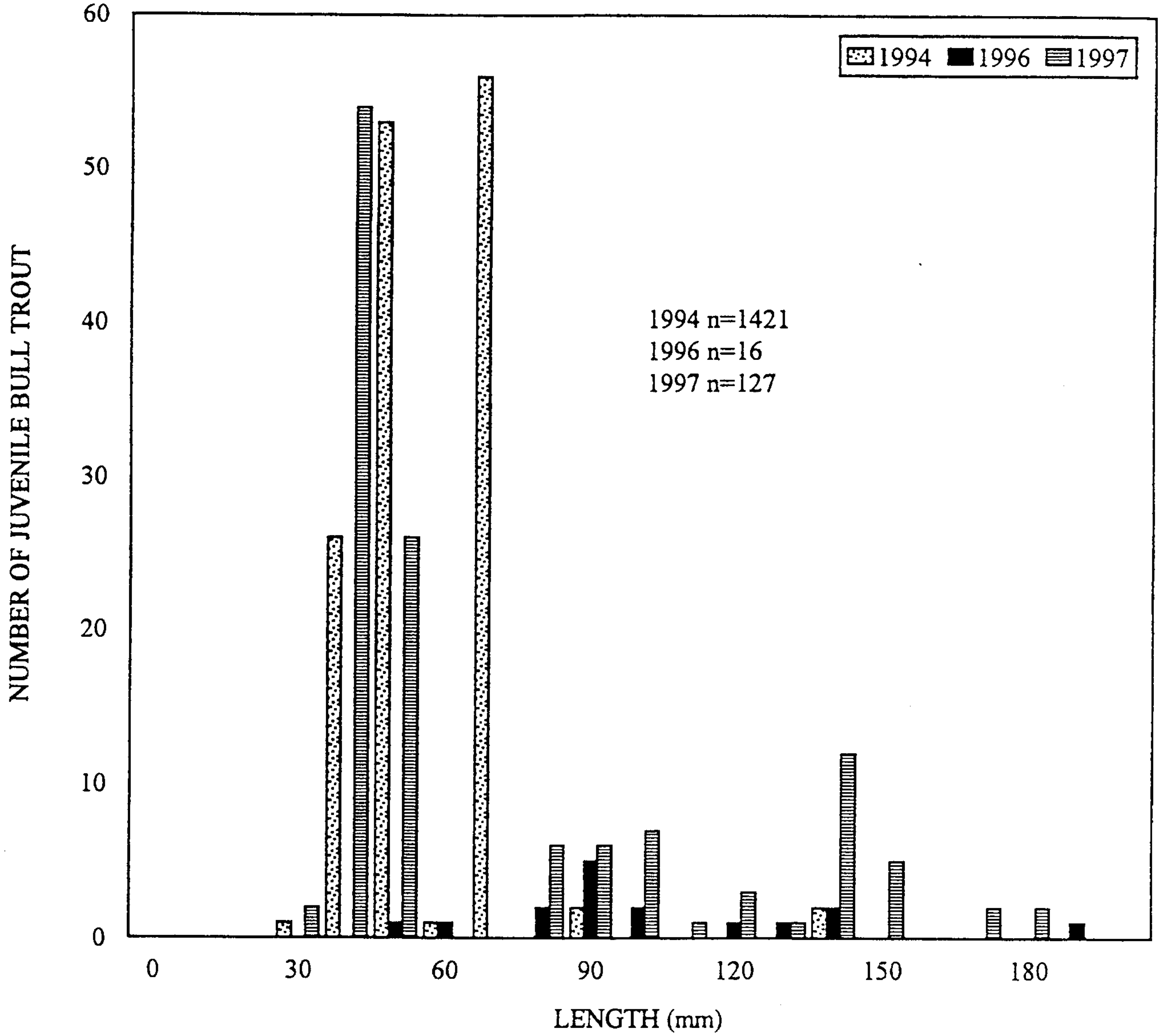


Figure 38. Number of bull trout redds counted in six index streams (Trestle, East Fork Lightning, Johnson, Grouse, North Gold, and Gold creeks) from the Pend Oreille Lake drainage, Idaho 1982 to 1997. (The equation for the regression line is y = -12.7X + 592.1).

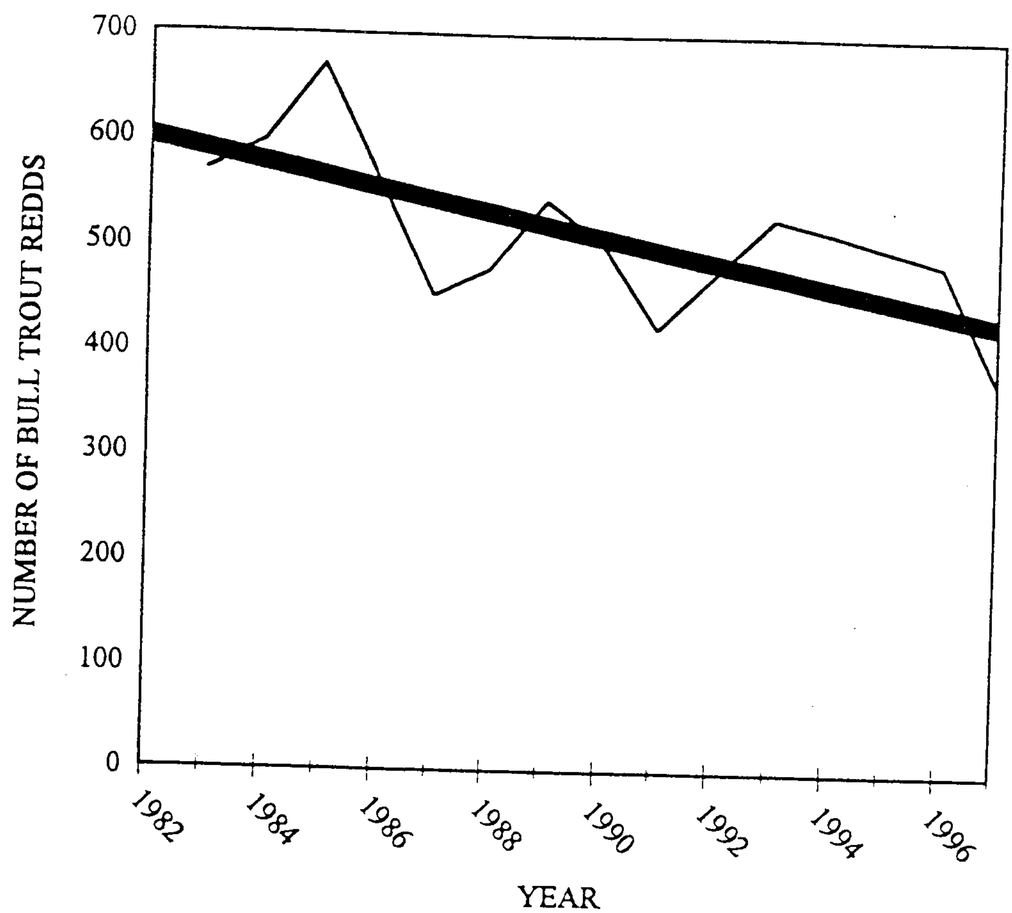


Figure 39. Number of bull trout redds counted in six index streams (Trestle, East Fork Lightning, Johnson, Grouse, North Gold, and Gold creeks) from the Lake Pend Oreille drainage, Idaho, 1982 to 1997. (The equation for the regression line is y=-12.7X+592.1).

Spokane River Drainage Regulation Assessment

Angler Survey

Bait, Fly and Lure Anglers-Bait anglers on the St. Joe and North Fork Coeur d'Alene rivers generally had the same attitudes (Tables 18 and 20). Bait anglers opinions on the two rivers differed in the following areas: bait anglers on the North Fork Coeur d'Alene River wanted to expand the harvest section, whereas bait anglers on the St. Joe River did not support expansion. Bait anglers on the North Fork Coeur d'Alene River preferred regulations resulting in higher harvest now and harvesting fewer fish in the future; St. Joe River bait anglers did not want to liberalize harvest. St. Joe River bait anglers thought stocked trout were as enjoyable to catch as wild trout; bait anglers on the North Fork Coeur d'Alene River did not agree.

Lure anglers from the St. Joe and North Fork Coeur d'Alene rivers did not agree on several questions (Tables 18 and 20). Lure anglers on the North Fork Coeur d'Alene River wanted to expand the harvest section whereas, lure anglers on the St. Joe River did not support expansion. Lure anglers on the St. Joe River tended to release all the trout they caught, whereas lure anglers on the North Fork Coeur d'Alene River did not. St. Joe River lure anglers did not think stocked trout were as enjoyable to catch as wild trout; lure anglers on the North Fork Coeur d'Alene River did not agree.

The attitudes of fly anglers from both rivers, with a few exceptions, were the same. They did not agree on questions 9 and 14. Fly anglers on the St. Joe River tended to release all the trout they caught, whereas fly anglers on the North Fork Coeur d'Alene River generally did not. Fly anglers on the North Fork Coeur d'Alene River thought stocking trout was important to maintain good fishing; fly anglers on the St. Joe River did not think stocking was important to good fishing.

All the groups (bait, fly, lure) agreed that regulations should allow trout harvest as well as catch-and-release fishing on both rivers. They did not want to increase harvest at the expense of catching fewer trout. They all agreed (with one exception, which was a draw) that current regulations allowed enough harvest (Tables 18 and 20). All groups released most of the trout they caught. None of the angler groups kept a legal limit of trout very often. Catching a 'limit of trout' was not important to any of the groups. They all agreed that stocked water increased the opportunity to catch trout.

River Sections-Responses from anglers in Sections 1, 2, and 3 of the St. Joe River (harvest sections) and Sections 1, 2, 3, and 4 in the North Fork Coeur d'Alene River (harvest sections) agreed to all but two questions (Tables 18 and 20). Anglers in the harvest sections on the St. Joe River were in favor of expanding the catch-and-release section; anglers in harvest sections on the North Fork Coeur d'Alene River were not in favor of expanding the catch-and-release section. Anglers in the harvest sections on the St. Joe River thought stocked trout were as enjoyable to catch as wild trout, whereas anglers in harvest sections on the North Fork Coeur d'Alene River did not agree. The anglers in Section 4 of the St. Joe River and Section 5 (catch-and-release sections) did not agree on whether stocking is necessary for a good trout fishery (Tables 18 and 20). Anglers in Section 4 of the St. Joe River did not think stocking of trout was important to maintaining a good fishery; anglers in Section 5 of the North Fork Coeur d'Alene River did not agree.

Displacement-The responses to questions 1-4 in Tables 19 and 21 were generally the same by group, by section, and for the total river. Anglers from both rivers were concerned with the opportunity to harvest trout. If the harvest of trout was eliminated, 20% of the anglers would stop fishing the North Fork Coeur d'Alene River and 7% of the anglers would stop fishing in the St. Joe River. Bait anglers tended to be focused on the use of bait and did not want bait fishing opportunity eliminated. If bait fishing were eliminated, 18% in the North Fork Coeur d'Alene River and 3% in the St. Joe River would stop fishing these areas. The majority of bait anglers indicated they would decrease the amount of time they spent fishing if bait fishing were eliminated.

The amount of time spent fishing by anglers from both rivers would remain the same if stocking of trout were eliminated (Table 19 and 21). However, if stocking were eliminated, 6% anglers on the North Fork Coeur d'Alene River and 2% anglers on the St. Joe River would stop fishing.

Generally, anglers in the Spokane River drainage supported the opportunity to harvest trout as well as the opportunity to catch-and-release trout. Anglers in the St. Joe River would support the expansion of the catch-and-release section whereas, the anglers from the North Fork Coeur d'Alene River would not. The amount of fishing activity on both rivers would not likely change significantly if hatchery stocking were eliminated in the identified river sections (Appendices A-Section 3 and B-Section 3). Current harvest regulations (six trout, only one cutthroat trout that must be 355 mm or longer) were satisfactory to most of the anglers in the drainage, for reaches where harvest was allowed.

These generalizations were based on a compilation of data that reflected a plurality of responses. A statistical analysis is necessary to assess significance of differences in these responses. We are currently working with the University of Idaho to develop a more thorough statistical analysis of the survey.

St. Joe River Regulation Modeling

Effects on Fish Population Abundance and Structure

Simulation 1-Generally, catch-and-release regulations allow a trout population to increase to its highest potential in relation to environmental factors and hooking mortality. If a trout population is depressed because of overfishing, a catch-and-release regulation would allow it to increase in abundance and improve its size structure. If the catch-and-release section of the St. Joe River were expanded to include the area between Prospector Creek and the North Fork St. Joe River, the cutthroat trout population may increase substantially from the 1996 estimate of 161 trout/km (Fredericks et al. F-71-R-21, in progress).

The cutthroat trout size structure would probably represent a healthy population with minimum fishing mortality (hooking mortality). Trout over 355 mm would be well represented. In 1995, we captured cutthroat trout over 350 mm at a rate of 21.7 trout/km in the catch-and-release study reach of the of the St. Joe River. In 1996, we captured cutthroat trout over 350 mm at a rate of 2.3 trout/km in the harvest section study reach from Packsaddle Campground downstream to the North Fork St. Joe River. If the catch-and-release section were extended to include this area, we would expect the number of trout over 355 mm to increase, possibly by as much as ten-fold.

Simulation 2-This simulation evaluated the current fishing regulations. In Simulation 2, the trout population abundance was about 15% less than under catch-and-release management. The decline occurred in the 355 mm and longer length group (Figure 33). The loss of cutthroat trout over 355 mm affected mature trout and reduced the reproductive potential. This model may not accurately reflect the real situation in the St. Joe River. In 1996, the population estimate for the harvest section was 30% less than the population estimate of the catch-and-release study reach in 1995 (Fredericks et al., F-71-R-21, in progress, Horner et al., F-71-R-19, in progress).

Simulation 3-Simulation 3 was not much different from Simulation 2. A larger number of cutthroat trout in the 355 mm and longer length group were harvested (Figure 33). The loss of mature trout reduced reproductive potential. Simulation 3 represents a worst case scenario for a harvest regulation allowing a two fish limit with a minimum length. The 66% exploitation rate may be considered higher than would probably occur on the St. Joe River for two reasons. First, probably very few anglers would catch two legal size trout in one day. Thurow (1987) reported only 10% of the anglers fishing the Big Wood River harvested more than one rainbow trout even though the harvest regulation allowed six trout in the creel. Second, the number of legal sized cutthroat trout in the harvest section of the St. Joe River was very low (Fredericks et al., F-71-R-21, in progress) reducing the opportunity for anglers to catch two legal sized cutthroat trout. The actual exploitation may be less than 66%.

Simulation 4-Simulation 4 was a worst case scenario. Exploitation was set at 66%, a doubling of the exploitation rate in Simulation 2. The 66% exploitation rate may be higher than what would be expected for a two fish bag limit on the St. Joe River. Schill (1992) reported a 50 to 60% range of exploitation rates for Idaho rivers for rainbow trout under a general six trout bag limit. The higher catchability of cutthroat trout than rainbow trout probably would not affect exploitation significantly in the St. Joe River because of the already high exploitation rate (Schill, personal comment).

Simulation 4 had the greatest effect on the trout population. The 33% reduction in total population affected size structure by removing many of the longer and mature fish. There was a 99% decline in trout over 355 mm and a 98% decline in trout over 330 mm. The loss of mature trout reduced egg production. The trout population abundance stabilized at a much lower number than with catch-and-release management (Figure 30). It is generally accepted that cutthroat trout cannot maintain a strong population under intense harvest (Rieman and Apperson 1989).

Effect on Harvest

Simulation 1-Under catch-and-release management all harvest is prohibited. In 1996, anglers harvested an estimated 459 cutthroat trout from the St. Joe River (Fredericks et al., F-71-R-21, in progress). Expansion of the catch-and-release section would eliminate 25% of the estimated harvest. Not only would harvest be reduced, expansion of the catch-and-release area would reduce hooking mortality from 16% to 3% or less (assuming bait is prohibited). Catch-and-release management generally results in higher catch rates. If the catch-and-release section were expanded in the St. Joe River from Prospector Creek downstream to the North Fork St. Joe River, catch rates should increase because of the likely increase in trout abundance. In 1996, the catch rate in the catch-and-release section was 1.4 trout/h and the catch rate in the harvest section was 0.6 trout/h (Fredericks et al., F-71-R-21, in progress). If the catch-and-release section is expanded, catch rates could possibly double.

Simulation 2-This simulation provided an opportunity to harvest cutthroat trout 355 mm or longer. This is the current regulation on the St. Joe River and the number of cutthroat trout over 355 mm is much lower than in the catch-and-release area suggesting that there are trout available for harvest but at a low abundance. One cutthroat trout over 355 mm allowed most trout to spawn at least once providing adequate, although reduced, reproduction.

Simulation 3-Doubling the harvest opportunity (two cutthroat 355 mm and longer) provided more fish to the angler initially but over time the number of cutthroat trout available for harvest would probably decline below the cutthroat trout abundance under Simulation 2. Again, most trout would have the opportunity to spawn at least once, but egg production would decrease slightly from that estimated from Simulation 2.

Simulation 4-The two trout any length regulation allowed anglers to legally harvest more trout than the previous simulations. Initially, harvest and probably fishing effort would increase. Over time cutthroat trout abundance and then effort would probably decline.

Simpler regulations and increased harvest opportunity may bring in new anglers. However, over time, the number of trout available to anglers would likely decrease significantly, and a decline in fishing effort might follow.

Effect on Anglers

Simulation 1-Simulation 1 affected harvest oriented anglers. If not given an opportunity to harvest trout in the entire river, 7% of the anglers would stop fishing the St. Joe River (Table 19). If the catch-and-release section were expanded to include just the area between Prospector Creek and North Fork St. Joe River, 3% of the anglers would stop fishing in this area. However, there may be an increase in the number of anglers who prefer catch-and-release fishing that may offset the loss of harvest oriented anglers. Angler effort in the section of the St. Joe River from Prospector Creek upstream to Spruce Tree Campground was about 5,000 hr/yr in 1978 when the harvest of three fish over 13 inches was allowed. Angler effort increased to about 13,000 hr/yr by 1990 in this same section of river, just two years after catch-and-release regulations were implemented in 1988 (Joel Hunt, personal comment). Special regulation waters often attract more anglers than are displaced (Moore 1978).

Simulation 2 and 3-Simulation 2 and 3 were not be much different from each other. The increase in harvest opportunity in Simulation 3 may not increase the number of new anglers. Effort might actually decrease over time as the number of harvestable trout decline.

Simulation 4-Simulation 4 increases the harvest opportunity and may result in an increase in fishing effort. Over time, effort may decrease as cutthroat abundance decreases.

Modeling is not a precise science. Modeling can be used to describe the relative magnitude of changes. Modeling helps to put into perspective the effects on fish population resulting from changes in management.

These four simulations reflect what could happen to the population of cutthroat trout in the St. Joe River. Modeling exercises are unlikely to give exact answers which reflect real-world conditions. At the same time, they can give reliable comparisons of how a fishery will respond to different management options. These simulations suggest that a catch-and-release regulation would increase catch rates and the number of larger trout in the population, that size limits (e.g. $\geq$355 mm) can maintain a population, and that even a reduced bag limit with no size restrictions will cause a decline. As harvest opportunity increases, more anglers may enter the fishery. More trout would be harvested, resulting in a decrease in abundance, and the size structure would shift toward smaller trout

Elimination of harvest opportunity would result in harvest oriented anglers leaving the fishery and catch-and-release oriented anglers entering the fishery. Trout population abundance would near capacity and size structure would reflect more longer trout.

Hatchery Trout Evaluation

The Fish Management Plan guidelines recommends a 40% return of stocked trout. Prolonged high water discharge delayed stocking until after the Fourth of July. Stocking usually occurs in late-May or early-June. For example, in the Moyie River mean daily discharge for May and June 1997 were 156% and 160% of the mean daily discharge for 1929-1996, respectively (Figure 33). Delayed stocking probably affected return rates by reducing the amount of time anglers fished in these systems for hatchery trout. High flows also tend to make catching a fish more difficult. This evaluation should be repeated in 1998 under more normal conditions.

RECOMMENDATIONS

1. Conduct biennial snorkeling surveys in the Little North Fork Coeur d'Alene, North Fork Coeur d'Alene, and St. Joe rivers using snorkeling or electrofishing.

2. Conduct biennial electrofishing population estimates in the Little North Fork Coeur d'Alene, North Fork Coeur d'Alene, and St. Joe rivers to correspond with snorkeling surveys.

3. Use radio telemetry to monitor cutthroat trout downstream movement to overwintering habitat.

4. Estimate annual fishing effort and harvest on the Little North Fork Clearwater River, and use this data to develop a management plan which considers the potential aspects of increasing effort and harvest.

5. Conduct an angler survey for the Little North Fork Clearwater River to determine angler attitudes toward the current management plan, what expectations they have and what changes, if any, they would accept.

6. Investigate additional tributaries including Sawtooth, Canyon, Culdesac, and Foehl creeks, for bull trout presence.

7. Count bull trout redds in the Upper Little North Fork Clearwater River, Lund, Lost Lake, and, Little Lost Lake creeks, Idaho.

8. Survey all seventeen bull trout spawning streams in the Pend Oreille drainage in 1997.

9. Monitor bull trout abundance through redd counts in four index streams in the St. Joe River drainage, Medicine Creek, Wisdom Creek, St. Joe River from Heller Creek to Medicine Creek and St. Joe River from Medicine Creek upstream to the cascades below St. Joe Lake.

10. Count bull trout redds in the Upper Priest Lake drainage the first week of October.

11. Survey the entire Upper Priest River for three years to establish new bull trout redd counting areas.

12. Work with land management agencies and private land owners to protect existing bull trout habitat.

13. Pursue a statistical analysis of the Spokane River Drainage Angler Survey from the University of Idaho.

14. Evaluate put-and-take rainbow trout harvest in Moyie and St. Maries rivers and Big Creek (St. Joe River) again in 1998.

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APPENDICES

Appendix A. Summary of angler opinion survey for the North Fork Coeur d'Alene River, Idaho, by river section 1996.

SPOKANE RIVER DRAINAGE ANGLER SURVEY

SECTION 1. These questions pertain to the **North Fork Coeur d'Alene River only.**

1. How many years have you fished the North Fork Coeur d'Alene River at least once?
______years

	Section 1	Section 2	Section 3	Section 4	Section 5
N of cases	9	7	25	37	26
Minimum	0	2.0	0	1.0	1.0
Maximum	30.0	30.0	70.0	45.0	30.0
Median	2.0	5.0	4.0	15.0	5.0
Mean	5.8	11.4	8.9	15.5	8.3
Std. error	3.1	4.5	2.8	2.1	1.6

2. How many days in the past 5 years have you fished the North Fork Coeur d'Alene River? (Please check one).

	Section 1		Section 2		Section 3		Section 4		Section 5	
	No.	%	No.	%	No.	%	No.	%	No.	%
___ 1-5 1	1.0	2	1.9	7	6.7	6	5.8	8	7.7	
___ 6-10	2	1.9	0	0	3	2.9	6	5.8	4	3.9
___ 11-15	2	1.9	1	1.0	3	2.9	4	3.9	3	2.9
___ 16-20	2	1.9	0	0	1	1.0	1	1.0	4	3.9
___ 21-25	1	1.0	1	1.0	2	1.9	3	2.9	1	1.0
___ >25	1	1.0	3	2.9	9	8.7	17	16.4	6	5.8
___ none	9	8.7	7	6.7	25	24.0	37	35.6	26	25.0

3. How many days have you fished the North Fork Coeur d'Alene River in the last 12 months? _____ days.

	Section 1	Section 2	Section 3	Section 4	Section 5
N	9	7	25	37	26
Minimum	0	1.0	1.0	0	1
Maximum	20.0	90.0	50.0	66.0	43.0
Median	10.0	20.0	4.0	8.0	3.0
Mean	8.9	26.1	7.5	14.0	6.0
Std. error	1.8	11.8	2.2	2.7	1.7

4. Do you fish on the North Fork Coeur d'Alene River (less often__, same__, more often___) now as you did in previous years?

	Section 1		Section 2		Section 3		Section 4		Section 5	
	No.	%	No.	%	No.	%	No.	%	No.	%
Less	1	1.0	2	2.0	9	9.2	17	17.4	4	4.1
Same	4	4.1	1	1.0	8	8.2	14	14.3	12	12.2
More	4	4.1	3	3.1	5	5.1	6	6.1	7	7.1

Appendix A. Continued.

5. What type (s) of tackle do you fish with **most often** on the North Fork Coeur d'Alene River? (Please check one)

	Section 1		Section 2		Section 3		Section 4		Section 5	
	No.	%	No.	%	No.	%	No.	%	No.	%
___ bait	6	6.2	3	3.1	6	6.2	5	5.2	1	1.0
___ lures	1	1.0	3	3.1	11	11.3	25	25.8	22	22.7
___ flies	2	2.1	1	1.0	5	5.2	5	5.2	1	1.0

6. Which section of the North Fork Coeur d'Alene River do you most **prefer** to fish? (Please check one)

_1_ Yellowdog Cr. downstream
_2_ Yellowdog Cr. upstream.
_3_ tributaries to the N. F. Coeur d'Alene River below Yellowdog Creek
_4_ No preference

	Section 1		Section 2		Section 3		Section 4		Section 5	
	No.	%	No.	%	No.	%	No.	%	No.	%
1	2	1.9	5	4.9	13	12.6	15	14.5	2	1.9
2	2	1.9	0	0	1	1.0	9	8.7	20	19.4
3	2	1.9	1	1.0	3	2.9	3	2.9	0	0
4	3	2.9	1	1.0	8	7.8	10	9.7	3	2.9

Why do you prefer to fish in this section? (Please select all that apply)

_A_ number of fish caught
_B_ type of fish
_C_ distance from home
_D_ type of water
_E_ closeness to a road
_F_ closeness to a campground
_G_ size of fish
_H_ fewer of people
_I_ type of fishing regulations
_J_ access
_K_ lack of a road
_L_ area is stocked with hatchery trout
_M_ other (please specify)________________________.

	Section 1	Section 2	Section 3	Section 4	Section 5
A	5	2	9	14	12
B	1	3	0	3	2
C	0	1	5	8	2
D	0	0	3	5	3
E	0	0	0	2	0
F	0	0	0	0	1
G	1	0	0	0	1
H	0	0	0	0	1
I	0	1	2	1	2
J	0	0	2	0	0
K	0	0	0	1	0
L	0	0	0	1	0
M	0	0	3	1	0

7. Some anglers may **prefer** to fish one area but **actually fish** in another. In the last five years, which

Appendix A. Continued.

section of the North Fork Coeur d'Alene River did you **most often** fish? (Please check one)
_1_ Yellowdog Cr. downstream
_2_ Yellowdog Cr. upstream
_3_ tributaries to the N.F. Coeur d'Alene River below Yellowdog Creek
_4_ all equally

	Section 1		Section 2		Section 3		Section 4		Section 5	
	No.	%	No.	%	No.	%	No.	%	No.	%
1	3`	3.0	6	6.0	16	16.2	19	19.2	3	3.0
2	2	2.0	0	0	2	2.0	7	7.1	17	17.2
3	2	2.0	0	0	4	4.0	3	3.0	2	2.0
4	1	1.0	1	1.0	2	2.0	7	7.1	2	2.0

Why did you actually fish this section most often? (Please select all that apply)
_A_ number of fish caught _G_ size of fish
_B_ type of fish _H_ fewer of people
_C_ distance from home _I_ type of fishing regulations
_D_ type of water _J_ access
_E_ closeness to a road _K_ lack of a road
_F_ closeness to a campground _L_ area is stocked with hatchery trout
_M_ other (please specify)____________________________.

	Section 1	Section 2	Section 3	Section 4	Section 5
A	4	1	9	13	10
B	0	3	0	4	3
C	2	2	6	11	2
D	0	0	2	2	4
E	0	0	1	1	0
F	0	0	0	0	1
G	1	0	0	1	0
H	0	0	0	0	0
I	0	0	2	1	3
J	0	0	2	0	0
K	0	0	0	0	0
L	0	0	0	1	0
M	0	1	1	0	0

Please circle the number that best describes your feelings.

8. I feel that fishing regulations for the North Fork Coeur d'Alene River are difficult to understand.

	Strongly Disagree		Disagree		Undecided		Agree		Strongly Agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
Section 1	1	1.0	5	4.9	1	1.0	1	1.0	1	1.0
Section 2	1	1.0	3	2.9	0	0	2	1.9	1	1.0
Section 3	2	1.9	13	12.6	6	5.8	1	1.0	2	1.9
Section 4	6	5.8	20	19.4	1	1.0	9	8.7	1	1.0
Section 5	7	6.8	14	13.6	2	1.9	2	1.9	1	1.0

9. The current fishing regulations on the North Fork Coeur d'Alene River are easy to follow.

Appendix A. Continued.

	No.	%	No.	%	No.	%	No.	%	No.	%
Section 1	2	1.9	1	1.0	1	1.0	5	4.9	0	0
Section 2	1	1.0	2	1.9	0	0	4	3.9	0	0
Section 3	3	2.9	0	0	6	5.8	15	14.6	1	1.0
Section 4	0	0	9	8.7	0	0	21	20.4	6	5.8
Section 5	2	1.9	2	1.9	2	1.9	16	15.5	4	3.9

10. Are you familiar with the Fish and Game special brochure on fishing in the Spokane River drainage?

	Section 1		Section 2		Section 3		Section 4		Section 5	
	No.	%	No.	%	No.	%	No.	%	No.	%
___ Yes	1	1.0	0	0	3	2.9	9	8.7	6	5.8
___ No	8	7.7	7	6.7	22	21.2	28	26.9	20	19.2

If yes, Please rate the usefulness of this brochure to you in understanding the fishing regulations on the North Fork Co d'Alene River?

	Section 1		Section 2		Section 3		Section 4		Section 5	
	No.	%	No.	%	No.	%	No.	%	No.	%
__ Poor 0	0	0	0	1	4.6	0	0	0	0	
__Fair	0	0	0	0	0	0	4	18.2	1	4.6
__Good	1	4.6	0	0	3	13.6	4	18.2	3	13.6
__Excellent	0	0	0	0	0	0	3	13.6	2	9.1

Ple

circle the number that best describes your feelings.

Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree

11. I feel it is important to allow catch-and-release fishing on a portion of the North Fork Coeur d'Alene River.

	No.	%	No.	%	No.	%	No.	%	No.	%
Section 1	0	0	2	1.9	1	1.0	4	3.9	2	1.9
Section 2	0	0	1	1.0	0	0	3	2.9	3	2.9
Section 3	2	1.9	0	0	4	3.9	7	6.8	11	10.7
Section 4	3	2.9	2	1.9	6	5.8	12	11.7	14	13.6
Section 5	0	0	2	1.9	0	0	5	4.9	19	18.5

12. I would support expanding the catch-and-release section of the North Fork Coeur d'Alene River knowing that harvest section would be smaller.

	No.	%	No.	%	No.	%	No.	%	No.	%
Section 1	1	1.0	1	1.0	1	1.0	4	3.9	2	1.9
Section 2	1	1.0	3	2.9	1	1.0	1	1.0	1	1.0
Section 3	7	6.7	6	5.8	7	6.7	3	2.9	2	1.9
Section 4	5	4.8	10	9.6	6	5.8	6	5.8	10	9.6
Section 5	2	1.9	1	1.0	3	2.9	3	2.9	17	16.4

13. I think it is important to allow harvest fishing on a portion of the North Fork Coeur d'Alene River.

Appendix A. Continued.

	No.	%	No.	%	No.	%	No.	%	No.	%
Section 1	0	0	1	1.0	0	0	7	6.7	1	1.0
Section 2	0	0	0	0	1	1.0	5	4.8	1	1.0
Section 3	1	1.0	1	1.0	3	2.9	10	9.6	10	9.6
Section 4	4	3.9	2	1.9	4	3.9	22	21.2	5	4.8
Section 5	5	4.8	3	2.9	6	5.8	8	7.7	4	3.9

14. I would support expanding the harvest section of the North Fork Coeur d'Alene River knowing that the catch-a release section would have to become smaller.

	No.	%	No.	%	No.	%	No.	%	No.	%
Section 1	1	1.0	2	1.9	2	1.9	4	3.9	0	0
Section 2	2	1.9	2	1.9	2	1.9	1	1.0	0	0
Section 3	3	2.9	10	9.6	4	3.9	5	4.8	3	2.9
Section 4	11	10.6	11	10.6	6	5.8	9	8.7	0	0
Section 5	16	15.4	6	5.8	1	1.0	3	2.9	0	0

15. I would prefer regulations which would result in me catching more fish, even if it meant I could keep fewer fish to t home.

	No.	%	No.	%	No.	%	No.	%	No.	%
Section 1	0	0	0	0	2	1.9	7	6.7	0	0
Section 2	0	0	1	1.0	3	2.9	2	1.9	1	1.0
Section 3	4	3.9	6	5.8	7	6.7	5	4.8	3	2.9
Section 4	1	1.0	8	7.7	5	4.8	14	13.5	9	8.7
Section 5	1	1.0	1	1.0	6	5.8	5	4.8	13	12.5

16. I would prefer regulations which allow me to keep more fish now knowing it would result in fewer fish to catch future trips.

	No.	%	No.	%	No.	%	No.	%	No.	%
Section 1	2	1.9	5	4.8	0	0	2	1.9	0	0
Section 2	1	1.0	3	2.9	2	1.9	1	1.0	0	0
Section 3	8	7.8	9	8.7	6	5.8	1	1.0	1	1.0
Section 4	17	16.5	16	15.5	3	2.9	1	1.0	0	0
Section 5	18	17.5	3	2.9	3	2.9	0	0	1	1.0

Appendix A. Continued.

SECTION 2. These questions pertain to your feelings in general about trout fishing. Please circle the num that best describes your feelings.

	Strongly Disagree		Disagree		Undecided		Agree		Strongly Agree	
1. I enjoy eating the trout I catch.										
	No.	%	No.	%	No.	%	No.	%	No.	%
Section 1	0	0	1	1.0	1	1.0	4	3.9	3	2.9
Section 2	0	0	2	1.9	0	0	3	2.9	2	1.9
Section 3	0	0	4	3.9	1	1.0	11	10.6	9	8.7
Section 4	5	4.8	4	3.9	2	1.9	14	13.5	12	11.5
Section 5	9	8.7	3	2.9	1	1.0	7	6.7	6	5.8
2. I would rather catch one trophy trout than my limit of average size trout.										
	No.	%	No.	%	No.	%	No.	%	No.	%
Section 1	1	1.0	4	3.9	0	0	3	2.9	1	1.0
Section 2	1	1.0	2	1.9	0	0	2	1.9	2	1.9
Section 3	3	2.9	11	10.6	2	1.9	7	6.7	2	1.9
Section 4	2	1.9	18	17.3	3	2.9	7	6.7	7	6.7
Section 5	2	1.9	4	3.9	2	1.9	6	5.8	12	11.5
3. I often share my trout catch with others.										
	No.	%	No.	%	No.	%	No.	%	No.	%
Section 1	0	0	4	3.9	0	0	5	4.9	0	0
Section 2	0	0	4	3.9	0	0	1	1.0	2	1.9
Section 3	5	4.9	11	10.7	0	0	6	5.8	3	2.9
Section 4	9	8.7	14	13.6	1	1.0	10	9.7	2	1.9
Section 5	13	12.6	5	4.9	1	1.0	6	5.8	1	1.0
4. I consider my fishing trip to be worthwhile, only if I catch trout.										
	No.	%	No.	%	No.	%	No.	%	No.	%
Section 1	0	0	4	3.9	0	0	3	2.9	2	1.9
Section 2	0	0	4	3.9	0	0	2	1.9	1	1.0
Section 3	4	3.9	13	12.5	3	2.9	2	1.9	3	2.9
Section 4	6	5.8	17	16.4	0	0	10	9.6	4	3.9
Section 5	6	5.8	10	9.6	2	1.9	3	2.9	5	4.8
5. I release most of the trout I catch.										
	No.	%	No.	%	No.	%	No.	%	No.	%
Section 1	0	0	0	0	0	0	7	6.7	2	1.9
Section 2	0	0	2	1.9	0	0	4	3.9	1	1.0
Section 3	1	1.0	5	4.8	3	2.9	10	9.6	6	5.8
Section 4	0	0	5	4.8	1	1.0	22	21.2	9	8.7
Section 5	1	1.0	0	0	0	0	8	7.7	17	16.4

Appendix A. Continued.

6. I release all the trout I catch.

	No.	%	No.	%	No.	%	No.	%	No.	%
Section 1	0	0	8	7.8	0	0	0	0	1	1.0
Section 2	1	1.0	5	4.9	0	0	0	0	1	1.0
Section 3	7	6.8	14	13.6	1	1.0	0	0	3	2.9
Section 4	5	4.9	22	21.4	4	3.9	0	0	5	4.9
Section 5	2	1.9	5	4.9	3	2.9	1	1.0	15	14.6

7. Catching a limit of trout is important to me.

	No.	%	No.	%	No.	%	No.	%	No.	%
Section 1	1	1.0	4	3.9	1	1.0	3	2.9	0	0
Section 2	2	1.9	3	2.9	0	0	1	1.0	0	0
Section 3	2	1.9	15	14.7	4	3.9	4	3.9	1	1.0
Section 4	7	6.9	22	21.6	2	1.9	4	3.9	1	1.0
Section 5	17	16.7	6	5.9	1	1.0	1	1.0	1	1.0

8. I enjoy catching more trout than my friends.

	No.	%	No.	%	No.	%	No.	%	No.	%
Section 1	0	0	3	2.9	2	1.9	2	1.9	2	1.9
Section 2	1	1.0	2	1.9	0	0	3	2.9	1	1.0
Section 3	2	1.9	12	11.7	1	1.0	5	4.9	5	4.9
Section 4	8	7.8	13	12.6	8	7.8	5	4.9	2	1.9
Section 5	6	5.8	9	8.7	2	1.9	4	3.9	5	4.9

9. I often keep all the trout I catch up to the legal limit.

	No.	%	No.	%	No.	%	No.	%	No.	%
Section 1	1	1.0	7	6.7	0	0	1	1.0	0	0
Section 2	0	0	4	3.9	0	0	3	2.9	0	0
Section 3	5	4.8	10	9.6	1	1.0	8	7.7	1	1.0
Section 4	11	10.6	18	17.3	1	1.0	7	6.7	0	0
Section 5	15	14.4	8	7.7	0	0	3	2.9	0	0

10. I feel stocked trout are as enjoyable to catch as wild trout.

	No.	%	No.	%	No.	%	No.	%	No.	%
Section 1	1	1.0	1	1.0	0	0	7	6.7	0	0
Section 2	0	0	4	3.9	1	1.0	2	1.9	0	0
Section 3	4	3.9	5	4.8	6	5.8	9	8.7	1	1.0
Section 4	3	2.9	14	13.5	9	8.7	7	6.7	4	3.9
Section 5	5	4.8	7	6.7	4	3.9	6	5.8	4	3.9

11. Fishing in stocked waters gives me a greater chance of catching trout.

	No.	%	No.	%	No.	%	No.	%	No.	%
Section 1	0	0	1	1.0	1	1.0	6	5.8	1	1.0
Section 2	0	0	2	1.9	1	1.0	3	2.9	1	1.0
Section 3	1	1.0	2	1.9	2	1.9	14	13.5	6	5.8
Section 4	1	1.0	5	4.8	3	2.9	25	24.0	3	2.9
Section 5	2	1.9	3	2.9	7	6.7	10	9.6	4	3.9

Appendix A. Continued.

12. I try to fish streams shortly after they are stocked with trout.

	No.	%	No.	%	No.	%	No.	%	No.	%
Section 1	1	1.0	6	5.8	1	1.0	1	1.0	0	0
Section 2	0	0	5	4.9	0	0	2	1.9	0	0
Section 3	6	5.8	14	13.6	4	3.9	0	0	1	1.0
Section 4	7	6.8	22	21.4	6	5.8	2	1.9	0	0
Section 5	12	11.7	8	7.8	4	3.9	1	1.0	0	0

13. Stocking is important to maintain good trout fishing.

	No.	%	No.	%	No.	%	No.	%	No.	%
Section 1	0	0	1	1.0	2	1.9	4	3.9	2	1.9
Section 2	1	1.0	0	0	1	1.0	4	3.9	1	1.0
Section 3	2	1.9	3	2.9	7	6.7	7	6.7	6	5.8
Section 4	1	1.0	5	4.8	8	7.7	21	20.2	2	1.9
Section 5	5	4.8	3	2.9	9	8.7	7	6.7	2	1.9

14. How would you compare the number of trout you catch to that of other anglers? (Please check one)

	Section 1		Section 2		Section 3		Section 4		Section 5	
	No.	%	No.	%	No.	%	No.	%	No.	%
___ much less	0	0	0	0	2	2.0	1	1.0	0	0
___ less	2	2.0	2	2.0	4	4.0	6	5.9	6	5.9
___ same	6	5.9	2	2.0	13	12.9	11	10.9	7	6.9
___ more	1	1.0	2	2.0	4	4.0	14	13.9	12	11.9
___ much more	0	0	1	1.0	2	2.0	3	3.0	0	0

15. Do you belong to a local sportsman club (ie. rod and gun club or fishing club)?

	Section 1		Section 2		Section 3		Section 4		Section 5	
	No.	%	No.	%	No.	%	No.	%	No.	%
___Yes	1	1.0	0	0	1	1.0	0	0	6	5.8
___ No	8	7.7	7	6.7	24	23.1	37	36.0	20	19.2

16. Do you belong to a National sportsman group?

	Section 1		Section 2		Section 3		Section 4		Section 5	
	No.	%	No.	%	No.	%	No.	%	No.	%
___ Yes 1	1.0	0	0	2	1.9	1	1.0	6	5.8	
___ No	8	7.7	7	6.7	23	22.1	35	34.6	20	19.2

17. What sporting magazines or newspapers do you receive? (Please select all that apply)

_A_ Trout
_B_ Hunting and Fishing News
_C_ In Fisherman
_D_ Sports Afield
_E_ Idaho Wildlife
_F_ Outdoor Life
_G_ Field and Stream
_H_ Fly Fisherman
_I_ Others (please list) ________________, ____________________, _____________
_J_ None

Appendix A. Continued.

	Section 1	Section 2	Section 3	Section 4	Section 5
A	0	0	0	0	5
B	1	1	2	1	1
C	0	0	0	1	1
D	2	1	2	3	2
E	0	0	0	1	0
F	1	0	7	7	3
G	0	1	0	1	0
H	0	0	1	0	5
I	0	0	0	6	2
J	5	4	12	16	7

18. Where do you receive your information on Idaho's fish and wildlife resources? (Please check all that apply)

	Section 1	Section 2	Section 3	Section 4	Section 5
___ Newspapers	1	3	11	16	9
___ Radio	0	0	0	0	0
___ Television	0	0	0	1	0
___ Regulations brochures	5	1	7	13	5
___ Brochures/pamphlets	0	1	0	0	1
___ Local sporting goods store	0	2	2	2	2
___ Family and friends	0	0	1	1	4
___ Department publications (Idaho Wildlife Magazine, Fish and Game News)	1	0	0	0	0
___ Do not know	0	0	0	0	0
___ Have not received information	1	0	2	0	0
___ other	0	0	1	0	0

SECTION 3. These questions pertain to the section of the North Fork Coeur d'Alene River ***downstream of Yell Dog Creek.*** Please answer the following questions ***<u>even if you do not fish</u>*** the section from Yellow D Creek downstream.

1. Do you fish the section of the North Fork Coeur d'Alene River **downstream from Yellow Dog Creek**?

		Section 1		Section 2		Section 3		Section 4		Section 5	
		No.	%	No.	%	No.	%	No.	%	No.	%
___Yes	6	5.8	7	6.8	22	21.4	35	34.0	11	10.7	
___No	1	1.0	0	0	1	1.0	2	1.9	14	13.6	
___Don't know	2	1.9	0	0	2	1.9	0	0	0	0	

Appendix A. Continued.

2. In general, I feel fishing regulations for **this section** of the North Fork Coeur d'Alene River allow me to l enough fish. (Please select the one that best describes your feelings.)

	Section 1		Section 2		Section 3		Section 4		Section 5	
	No.	%	No.	%	No.	%	No.	%	No.	%
___ Strongly disagree	0	0	1	1.0	3	2.9	2	2.0	2	2.0
___ Disagree	1	1.0	1	1.0	5	4.9	8	7.9	2	2.0
___ Neutral	3	2.9	0	0	3	2.9	6	5.9	7	6.9
___ Agree	5	4.9	4	3.9	11	10.8	12	11.8	11	10.8
___ Strongly agree	0	0	1	1.0	3	2.9	9	8.8	2	2.0

3. If the number of hatchery trout stocked **in this section** was **decreased,** my fishing effort **on the section** of the river would. (Please select the one that best describes your feelings)

	Section 1		Section 2		Section 3		Section 4		Section 5	
	No.	%	No.	%	No.	%	No.	%	No.	%
___ I would stop fishing this portion entirely	0	0	0	0	2	2.0	0	0	0	0
___ Decrease considerably	2	2.0	2	2.0	1	1.0	3	3.0	1	1.0
___ Decrease some	3	3.0	0	0	7	6.9	6	5.9	5	4.9
___ Stay the same	3	3.0	5	4.9	14	13.9	27	26.7	14	13.9
___ Increase some	0	0	0	0	1	1.0	1	1.0	3	3.0
___ Increase considerably	0	0	0	0	0	0	0	0	0	11.0

4. If hatchery stocking were stopped in this section, how would this change affect your fishing acti on **this section** of the North Fork Coeur d'Alene River. (Please select the one that best describes y feelings)

	Section 1		Section 2		Section 3		Section 4		Section 5	
	No.	%	No.	%	No.	%	No.	%	No.	%
___ I would stop fishing this section	1	1.0	1	1.0	1	1.0	0	0	0	0
___ I would decrease my fishing activity	3	3.0	1	1.0	8	7.8	8	7.8	2	2.0
___ My fishing activity would remain the same	5	4.9	4	3.9	15	14.7	28	27.5	15	14.7
___ I would increase my fishing activity	0	0	1	1.0	0	0	1	1.0	6	5.9
___ I would begin fishing	0	0	0	0	1	1.0	0	0	1	1.0

5. Due to the cost of raising hatchery trout ($.60 each to rear and stock), the Department tries to st trout only where at least 40% of the fish stocked are caught (this costs $1.50 per fish caught). I would sup eliminating stocking in the North Fork Coeur d'Alene River where less than 40% of the fishstocked were caught.

	Section 1		Section 2		Section 3		Section 4		Section 5	
	No.	%	No.	%	No.	%	No.	%	No.	%
___ Yes	5	5.0	4	4.0	9	8.9	17	16.8	14	13.9
___ No	4	4.0	3	3.0	16	15.8	19	18.8	10	9.9

Appendix A. Continued.

6. I would support the elimination of stocking hatchery trout in the section of North Fork Coeur d'Alene River ***fr Yellow Dog Creek downstream***, if ponds were constructed along the river and stocked with hatchery trout I co keep.

	Section 1		Section 2		Section 3		Section 4		Section 5	
	No.	%	No.	%	No.	%	No.	%	No.	%
___ Yes	5	5.0	3	3.0	4	4.0	4	4.0	5	5.0
___ No	4	4.0	4	4.0	20	20.2	31	31.3	19	19.2

7. If opportunity to keep fish was eliminated on the section of the North Fork Coeur d'Alene River ***from Yel Dog Creek downstream to Lost Creek***, how would this change affect your fishing activity in this secti (Please select the one that best describes your feelings)

	Section 1		Section 2		Section 3		Section 4		Section 5	
	No.	%	No.	%	No.	%	No.	%	No.	%
___ I would begin fishing in this section in this section	0	0	0	0	0	0	1	1.0	6	5.8
___ I would increase my fishing activity in this section	1	1.0	1	1.0	1	1.0	6	5.8	7	6.7
___ My fishing activity would remain the same in this section	6	5.8	2	1.9	8	7.7	16	15.4	9	8.7
___ I would decrease my fishing activity in this section	0	0	4	3.9	5	4.8	9	8.6	1	1.0
___ I would stop fishing this section	2	1.9	0	0	10	9.6	5	4.8	2	1.9

8. If it were unlawful to use bait in the North Fork Coeur d'Alene River ***from Yellow Dog Creek downstrean Lost Creek***, my fishing effort **on this section** would. (Please select the one that best describes your feelings)

	Section 1		Section 2		Section 3		Section 4		Section 5	
	No.	%	No.	%	No.	%	No.	%	No.	%
___ I would stop fishing this portion entirely	0	0	0	0	1	1.0	0	0	1	1.0
___ Decrease considerably	1	1.0	0	0	2	1.9	3	2.9	0	0
___ Decrease some	1	1.0	4	3.9	4	3.9	3	2.9	1	1.0
___ Not change	3	2.9	1	1.0	4	3.9	5	4.8	2	1.9
___ Increase some	4	3.9	2	1.9	9	8.7	19	18.3	8	7.7
___ Increase considerably	0	0	0	0	3	2.9	3	2.9	7	6.7

Appendix A. Continued.

SECTION 4. This section pertains **only to the tributaries** of the North Fork Coeur d'Alene River from ***Yellowdog Creek downstream.***

1. Do you fish in the tributaries to the North Fork Coeur d'Alene River downstream of Yellow Creek?

	Section 1		Section 2		Section 3		Section 4		Section 5	
	No.	%	No.	%	No.	%	No.	%	No.	%
___ Yes	4	3.9	5	4.9	13	12.6	20	19.4	7	6.8
___ No	5	4.9	2	1.9	11	10.7	17	16.5	19	18.5

2. In the last 12 months, how many days have you fished in the tributaries to the North Fork Coeur d'Alene R downstream of Yellow Dog Creek? (Please check one)

	Section 1		Section 2		Section 3		Section 4		Section 5	
	No.	%	No.	%	No.	%	No.	%	No.	%
___ 1-5	2	2.0	1	1.0	12	12.1	9	9.1	6	6.1
___ 6-10	2	2.0	2	2.0	2	2.0	4	4.0	1	1.0
___ 11-15	1	1.0	1	1.0	0	0	2	2.0	0	0
___ 16-20	0	0	0	0	0	0	2	2.0	0	0
___ 21-25	0	0	0	0	0	0	0	0	1	1.0
___ >25	0	0	1	1.0	1	1.0	1	1.0	0	0
___ none	0	0	0	0	0	0	0	0	0	0

3. In general, I feel that fishing regulations on the tributaries in **this section** of the North Fork Coeur d'Alene Ri allow me to keep enough fish (current limit for trout is six fish). (Please select the one that best describes y feelings)

	Section 1		Section 2		Section 3		Section 4		Section 5	
	No.	%	No.	%	No.	%	No.	%	No.	%
___ Strongly disagree	0	0	0	0	1	1.0	1	1.0	2	2.1
___ Disagree	0	0	0	0	1	1.0	1	1.0	0	0
___ Neutral	7	7.2	1	1.0	5	5.2	13	13.4	7	7.2
___ Agree	2	2.1	6	6.2	11	11.3	15	15.5	6	6.2
___ Strongly agree	0	0	0	0	3	3.1	7	7.2	8	8.3

4. If the bag limit was reduced on the tributaries, how would this change affect your fishing activity these streams? (Please select the one that best describes your feelings)

	Section 1		Section 2		Section 3		Section 4		Section 5	
	No.	%	No.	%	No.	%	No.	%	No.	%
___ I would stop fishing this section	0	0	1	1.0	2	2.1	1	1.0	0	0
___ I would decrease my fishing activity	1	1.0	2	2.1	3	3.1	4	4.2	1	1.0
___ My fishing activity would remain the same	7	7.3	3	3.1	15	15.6	28	29.2	17	17.7
___ I would increase my fishing activity	0	0	1	1.0	1	1.0	2	2.1	1	1.0
___ I would begin fishing	0	0	0	0	0	0	2	2.1	4	4.2

Appendix A. Continued.

	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree	

5. It is important to me to have uniform regulations on the tributaries and the mainstem knowing that harvest ma be reduced.

	No.	%	No.	%	No.	%	No.	%	No.	%
Section 1	0	0	1	1.0	4	3.9	4	3.9	0	0
Section 2	1	1.0	0	0	2	1.9	4	3.9	0	0
Section 3	2	1.9	4	3.9	7	6.7	5	4.8	3	2.9
Section 4	0	0	5	4.8	11	10.6	15	14.4	4	3.9
Section 5	1	1.0	4	3.9	4	3.9	7	6.7	7	6.7

6. It is important to me to have the opportunity to harvest a limit of fish in the tributaries knowing that fish regulations would be more complicated.

	No.	%	No.	%	No.	%	No.	%	No.	%
Section 1	1	1.0	3	2.9	3	2.9	2	1.9	0	0
Section 2	1	1.0	3.	2.9	0	0	2	1.9	1	1.0
Section 3	2	1.9	9	8.7	4	3.9	4	3.9	2	1.9
Section 4	5	4.8	17	16.4	11	10.6	2	1.9	0	0
Section 5	10	9.6	6	5.8	6	5.8	0	0	0	0

SECTION 5. These questions pertain to **guided fishing trips** on the North Fork Coeur d'Alene River. (Please cir the number that best describes your feelings).

	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree	

1. Commercially **guided walk and wade** fishing trips are appropriate on the North Fork Coeur d'Alene River.

	No.	%	No.	%	No.	%	No.	%	No.	%
Section 1	3	3.1	2	2.1	3	3.1	1	1.0	0	0
Section 2	2	2.1	2	2.1	1	1.0	1	1.0	0	0
Section 3	12	12.5	3	3.1	4	4.2	3	3.1	0	0
Section 4	10	10.4	11	11.5	7	7.3	4	4.2	1	1.0
Section 5	5	5.2	5	5.2	7	7.3	6	6.3	3	3.1

2. Commercially **guided float boat** fishing trips are appropriate on the North Fork Coeur d'Alene River.

	No.	%	No.	%	No.	%	No.	%	No.	%
Section 1	3	3.1	3	3.1	3	3.1	0	0	0	0
Section 2	3	3.1	2	2.1	0	0	1	1.0	0	0
Section 3	10	10.4	4	4.2	5	5.2	3	3.1	0	0
Section 4	13	13.5	10	10.4	7	7.3	3	3.1	0	0
Section 5	10	10.4	6	6.3	5	5.2	3	3.1	2	2.1

Appendix A. Continued.

3. The number of guided fishing trips on the North Fork Coeur d'Alene River is _____

	Section 1		Section 2		Section 3		Section 4		Section 5	
	No.	%	No.	%	No.	%	No.	%	No.	%
too low___	0	0	0	0	0	0	0	0	3	3.1
just right___	1	1.0	1	1.0	2	2.1	3	3.1	2	2.1
too high___	0	0	1	1.0	4	4.1	3	3.1	6	6.1
don't know ___ 8	8.2	5	5.1	15	15.3	29	29.6	15	15.3	

SECTION 6. The following questions pertain to your overall knowledge of the Department of Fish and Game.

1. How well does the Department manage the supply of game fish for fishing in the North Fork Coeur d'Alene Ri

	Poor		Fair		Good		Excellent		Don't know	
	No.	%	No.	%	No.	%	No.	%	No.	%
Section 1	0	0	2	1.9	5	4.9	0	0	2	1.9
Section 2	0	0	2	1.9	2	1.9	0	0	3	2.9
Section 3	0	0	8	7.8	7	6.8	3	2.9	6	5.8
Section 4	2	1.9	8	7.8	10	9.7	4	3.9	13	12.6
Section 5	0	0	7	6.8	10	9.7	2	1.9	7	6.8

2. How well does the Department manage and protect the fish resources in the North Fork Coeur d'Alene River

	No.	%	No.	%	No.	%	No.	%	No.	%
Section 1	0	0	2	2.0	4	3.9	1	1.0	2	2.0
Section 2	1	1.0	0	0	3	2.9	0	0	3	2.9
Section 3	1	1.0	3	2.9	10	9.8	5	4.9	5	4.9
Section 4	5	4.9	3	2.9	10	9.8	9	8.8	9	8.8
Section 5	1	1.0	7	6.9	10	9.8	3	2.9	5	4.9

3. How well does the Department manage and protect fish habitat in the North Fork Coeur d'Alene River?

	No.	%	No.	%	No.	%	No.	%	No.	%
Section 1	1	1.0	0	0	6	5.9	0	0	2	2.0
Section 2	2	2.0	0	0	2	2.0	0	0	3	2.9
Section 3	2	2.0	5	4.9	9	8.8	5	4.9	3	2.9
Section 4	6	5.9	4	3.9	9	8.8	6	5.9	11	10.8
Section 5	1	1.0	9	8.8	9	8.8	2	2.0	5	4.9

4. How well has the Department incorporated sportsmen's wants and needs into management of the North Fork Coeur d'Alene River?

	No.	%	No.	%	No.	%	No.	%	No.	%
Section 1	1	1.0	1	1.0	4	3.9	1	1.0	2	1.9
Section 2	0	0	0	0	4	3.9	0	0	3	2.9
Section 3	0	0	5	4.9	10	9.7	3	2.9	6	5.8
Section 4	5	4.8	6	5.8	6	5.8	5	4.8	15	14.6
Section 5	2	1.9	8	7.8	6	5.8	4	3.9	6	5.8

Appendix A. Continued.

SECTION 7. The following questions are optional, but will help us better understand the anglers who fish the N(Fork Coeur d'Alene River drainage.

1. What is your gender?

	Section 1		Section 2		Section 3		Section 4		Section 5	
	No.	%	No.	%	No.	%	No.	%	No.	%
___Male	8	7.8	7	6.8	22	21.4	33	32.0	26	25.2
___Female	1	1.0	0	0	2	1.9	4	3.9	0	0

2. What is your marital status?

	Section 1		Section 2		Section 3		Section 4		Section 5	
	No.	%	No.	%	No.	%	No.	%	No.	%
____ Single	4	3.9	3	2.9	10	9.7	7	6.8	5	4.9
____ Married	5	4.9	4	3.9	14	13.6	30	29.1	21	20.4

3. Do you have any children living at home?

	Section 1		Section 2		Section 3		Section 4		Section 5	
	No.	%	No.	%	No.	%	No.	%	No.	%
____ Yes	4	3.9	4	3.9	12	11.7	12	11.7	9	8.7
____ No	5	4.9	3	2.9	12	11.7	25	24.3	17	16.5

4. Please select the response that best describes the area where you live. (Please check one)

	Section 1		Section 2		Section 3		Section 4		Section 5	
	No.	%	No.	%	No.	%	No.	%	No.	%
rural area	3	2.9	0	0	3	2.9	1	1.0	2	1.9
suburb	2	1.9	2	1.9	7	6.8	13	12.6	5	4.9
small town (less than 4,999)	0	0	1	1.0	2	1.9	8	7.8	7	6.7
small city (5,000 to 49,999)	0	0	1	1.0	1	1.0	4	3.9	0	0
large city (50,000 to 500,000)	4	3.9	3	2.9	11	10.7	10	9.7	12	11.7
very large city (over 500,000)	0	0	0	0	0	0	1	1.0	0	0

5. What is the highest level of education you have completed? (Please check one)

	Section 1		Section 2		Section 3		Section 4		Section 5	
	No.	%	No.	%	No.	%	No.	%	No.	%
some high school	1	1.0	0	0	2	1.9	0	0	0	0
high school graduate	1	1.0	0	0	3	2.9	3	2.9	3	2.9
some college	2	1.9	0	0	2	0	6	5.8	1	1.0
college graduate	4	3.9	3	2.9	9	8.7	16	15.5	9	8.7
graduate or professional degree	1	1.0	1	1.0	6	5.8	4	3.9	11	10.7
trade or technical school	0	0	3	2.9	2	1.9	8	7.8	2	1.9

Appendix A. Continued.

6. Which category best describes your occupation. (Please check one)

	Section 1		Section 2		Section 3		Section 4		Section 5	
	No.	%	No.	%	No.	%	No.	%	No.	%
____professional/technical 1	1.0	3	2.9	4	3.9	9	8.7	8	7.7	
____service worker	0	0	0	0	0	0	1	1.0	0	0
____skilled worker	2	1.9	2	1.9	12	11.7	4	3.9	6	5.8
____farmer	0	0	0	0	0	0	0	0	0	0
____skilled worker/operator	3	2.9	0	0	2	1.9	5	4.8	3	2.9
____student	0	0	1	1.0	0	0	0	0	0	0
____unskilled laborer	0	0	0	0	1	1.0	0	0	0	0
____retired	2	1.9	0	0	1	1.0	7	6.7	1	1.0
____clerical/sales	0	0	0	0	1	1.0	0	0	0	0
____housewife	0	0	0	0	0	0	0	0	0	0
____logger	0	0	0	0	0	0	1	1.0	0	0
____self-employed business	0	0	1	1.0	0	0	5	4.9	6	5.8
____miner	0	0	0	0	0	0	0	0	0	0
____other	1	1.0	0	0	2	1.9	3	2.9	2	1.9

7. Please give your age. __________ Years

	Section 1	Section 2	Section 3	Section 4	Section 5
N	9	7	25	37	26
Minimum	21	31	0	24	24
Maximum	64	51	79	80	77
Median	37	38	29	45	42
Mean	39	38	33	46	43
Std. error	4.7	2.7	3.4	2.4	2.8

Thank you for your time and assistance in completing this questionnaire. Your assistance will help expand our understanc of the men and women involved with the fishing in the Spokane drainage.

Appendix B. Summary of angler opinion survey for the St. Joe River, Idaho by river section, 1996.

SPOKANE RIVER DRAINAGE ANGLER SURVEY

SECTION 1. These questions pertain to the **ST. JOE RIVER only.**

1. How many years have you fished the St. Joe River at least once?

	Section 1	Section 2	Section 3	Section 4
N	7	21	67	141
Minimum	5	0	0	0
Maximum	66	64	40	56
Median	20	15	6	5
Mean	28	17	9.5	8.8
Std. error	8.6	3.9	1.3	0.8

2. How many days in the past 5 years have you fished the St. Joe River? (Please check one)

	Section 1		Section 2		Section 3		Section 4	
No. %	No.	%	No.	%	No.	%		
___ 1-5 1	0.5	2	0.9	15	6.8	35	15.8	
___ 6-10	0	0	2	0.9	10	4.5	21	9.5
___ 11-15	0	0	3	1.4	5	2.3	14	6.3
___ 16-20	1	0.5	2	0.9	1	0.5	12	5.4
___ 21-25	0	0	0	0	8	3.6	5	2.3
___ >25	5	2.3	4	1.8	23	10.4	53	23.9
___ none	0	0	0	0	0	0	0	0

3. How many days have you fished the St. Joe River in the last 12 months?

	Section 1	Section 2	Section 3	Section 4
N	7	21	67	141
Minimum	4	1	1	0
Maximum	60	24	60	30
Median	18	3	4	5
Mean	21.3	6.7	8.9	7.4
Std. error	7.0	1.5	1.3	0.5

4. Do you fish on the St. Joe River (less often___, same___, more often___) now as you did in previous years?

	Section 1		Section 2		Section 3		Section 4	
	No.	%	No.	%	No.	%	No.	%
Less often	1	0.5	4	1.9	11	5.2	22	10.4
Same	3	1.4	5	2.4	28	13.2	61	28.8
More often	3	1.4	3	1.4	23	10.9	46	21.7

Appendix B. Continued.

5. What type (s) of tackle do you fish with **most often** on the St. Joe River? (Please check one)

	Section 1		Section 2		Section 3		Section 4	
	No.	%	No.	%	No.	%	No.	%
___ bait	1	0.5	2	0.9	19	8.9	0	0
___ lures	3	1.4	4	1.9	8	3.7	9	4.2
___ flies	3	1.4	5	2.3	30	14.0	130	60.8

6. Which section of the St. Joe River do you most **prefer** to fish? (Please check one)

_1_Prospector Cr. downstream
_2_Prospector Cr. upstream to Spruce Tree CG
_3_Spruce Tree CG upstream
_4_No preference
_5_Marble Creek
_6_North Fork St. Joe
_7_Other tributaries

	Section 1		Section 2		Section 3		Section 4	
	No.	%	No.	%	No.	%	No.	%
1	3	1.5	5	2.4	28	13.6	4	1.9
2	1	0.5	2	1.0	13	6.3	75	36.4
3	0	0	1	0.5	3	1.0	27	13.1
4	2	1.0	2	1.0	13	6.3	16	7.8
5	1	0.5	1	0.5	1	.05	2	1.0
6	0	0	0	0	3	1.5	1	0.5
7	0	0	0	0	0	0	0	0

Why do you prefer to fish in this section? (Please select all that apply)

_A_ number of fish caught
_B_ type of fish
_C_ distance from home
_D_ type of water
_E_ closeness to a road
_F_ closeness to a campground
_G_ size of fish
_H_ fewer of people
_I_ type of fishing regulations
_J_ access
_K_ lack of a road
_L_ area is stocked with hatchery trout
_M_ other (please specify)______________________.

	Section 1	Section 2	Section 3	Section 4
A	1	10	34	80
B	0	1	2	9
C	3	2	2	1
D	1	6	9	16
E	0	0	1	3
F	1	0	0	4
G	1	0	3	3
H	0	0	0	6
I	0	1	4	1
J	0	0	1	0
K	0	0	0	2
L	0	0	1	0
M	0	0	3	5

Appendix B.   Continued.

7. Some anglers may **prefer** to fish one area but **actually fish** in another. In the last five years, which sectioı the St. Joe River did you **most often** fish? (Please check one)

_1_ Prospector Cr. downstream
_2_ Prospector Cr. upstream to Spruce Tree CG
_3_ Spruce Tree CG upstream
_4_ all equally
_5_ Marble Cr.
_6_ North Fork St. Joe River
_7_ other tributaries

	Section 1		Section 2		Section 3		Section 4	
	No.	%	No.	%	No.	%	No.	%
1	3	1.5	7	3.4	32	15.5	10	4.9
2	1	0.5	1	0.5	16	7.8	86	41.8
3	0	0	1	0.5	3	1.4	15	7.3
4	1	0.5	1	0.5	4	1.9	9	4.4
5	2	1.0	1	0.5	2	1.0	1	0.5
6	0	0	1	0.5	4	1.9	3	1.5
7	0	0	0	0	0	0	0	0

Why did you actually fish this section most often? (Please select all that apply)

_A_ number of fish caught
_B_ type of fish
_C_ distance from home
_D_ type of water
_E_ closeness to a road
_F_ closeness to a campground
_G_ size of fish
_H_ fewer of people
_I_ type of fishing regulations
_J_ access
_K_ lack of a road
_L_ area is stocked with hatchery trout
_M_ other (please specify)____________________________.

	Section 1	Section 2	Section 3	Section 4
A	1	9	31	67
B	0	1	2	10
C	2	3	3	7
D	1	3	9	14
E	0	1	1	5
F	1	1	1	7
G	1	0	2	1
H	0	0	2	8
I	0	1	4	3
J	0	0	2	1
K	0	0	0	0
L	0	0	0	0
M	0	0	6	2

Please circle the number that best describes your feelings.

Appendix B. Continued.

8. I feel that fishing regulations for the St. Joe River are difficult to understand.

	Strongly Disagree		Disagree		Undecided		Agree		Strongly Agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
Section 1	2	0.9	3	1.4	0	0	2	0.9	0	0
Section 2	4	1.8	5	2.3	0	0	3	1.4	1	0.9
Section 3	16	7.2	33	14.9	4	1.8	7	3.2	3	1.4
Section 4	52	23.4	71	32.0	7	3.2	7	3.2	2	0.9

9. The current fishing regulations on the St. Joe River are easy to follow.

	No.	%	No.	%	No.	%	No.	%	No.	%
Section 1	0	0	1	0.5	0	0	4	1.8	2	0.9
Section 2	0	0	5	2.3	0	0	4	1.8	4	1.8
Section 3	4	1.8	5	2.3	5	2.3	37	16.7	11	5.0
Section 4	7	3.2	5	2.3	7	3.2	79	35.8	41	18.6

10. Are you familiar with the Fish and Game special brochure on fishing in the Spokane River drainage?

	Section 1		Section 2		Section 3		Section 4	
	No.	%	No.	%	No.	%	No.	%
___ Yes	0	0	1	0.5	7	3.1	29	13
___ No	7	3.1	12	5.4	55	24.7	112	50.2

If yes, Please rate the usefulness of this brochure to you in understanding the fishing regulations on the St. Joe River'

	Section 1		Section 2		Section 3		Section 4	
	No.	%	No.	%	No.	%	No.	%
___ Poor	0	0	1	2.7	0	0	0	0
___Fair	0	0	0	0	1	2.7	4	10.8
___Good	0	0	0	0	5	13.5	21	56.8
___Excellent	0	0	0	0	1	2.7	4	10.8

Please circle the number that best describes your feelings.

11. I feel it is important to allow catch-and-release fishing on a portion of the St. Joe River.

	Strongly Disagree		Disagree		Undecided		Agree		Strongly Agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
Section 1	1	0.5	0	0	1	0.5	3	1.4	2	0.9
Section 2	1	0.5	0	0	2	0.9	3	1.4	7	3.1
Section 3	2	0.9	0	0	2	0.9	17	7.6	42	18.8
Section 4	1	0.5	2	0.9	0	0.9	21	9.4	114	51.1

12. I would support expanding the catch-and-release section of the St. Joe River knowing that the harvest section w

Appendix B. Continued.

be smaller.

	No.	%	No.	%	No.	%	No.	%	No.	%
Section 1	3	1.3	1	0.5	1	0.5	2	0.9	0	0
Section 2	3	1.3	3	1.3	1	0.5	1	0.5	5	2.2
Section 3	13	5.8	12	5.4	9	4.0	5	2.2	24	10.7
Section 4	6	2.7	9	4.0	11	4.9	26	11.6	89	39.7

13. I think it is important to allow harvest fishing on a portion of the St. Joe River.

	No.	%	No.	%	No.	%	No.	%	No.	%
Section 1	0	0	0	0	0	0	4	1.8	3	1.4
Section 2	2	0.9	2	0.9	0	0	5	2.3	3	1.4
Section 3	5	2.3	3	1.4	4	1.8	30	13.5	20	9.0
Section 4	26	11.7	21	9.5	25	11.3	57	25.7	12	5.4

14. I would support expanding the harvest section of the St. Joe River knowing that the catch-and-release section wc have to become smaller.

	No.	%	No.	%	No.	%	No.	%	No.	%
Section 1	2	0.9	3	1.4	1	0.5	1	0.5	0	(
Section 2	4	1.8	5	2.2	0	0	1	0.5	2	(
Section 3	29	13.0	20	9.0	6	2.7	4	1.8	4	1
Section 4	100	44.8	27	12.1	6	2.7	4	1.8	4	1

15. I would prefer regulations which would result in me catching more fish, even if it meant I could keep fewer fish to t home.

	No.	%	No.	%	No.	%	No.	%	No.	%
Section 1	0	0	1	0.5	3	1.4	2	0.9	0	0
Section 2	0	0	3	1.4	0	0	5	2.3	4	1.
Section 3	4	1.8	13	5.9	6	2.7	13	5.9	27	12.
Section 4	8	3.6	9	4.1	10	4.5	33	14.9	80	36.

16. I would prefer regulations which allow me to keep more fish now knowing it would result in fewer fish to catch future trips.

	No.	%	No.	%	No.	%	No.	%	No.	%
Section 1	3	1.4	3	1.4	1	0.5	0	0	0	0
Section 2	5	2.3	5	2.3	2	0.9	0	0	0	0
Section 3	37	16.7	21	9.5	1	0.5	2	0.9	2	0.9
Section 4	108	48.7	22	9.9	5	2.3	3	1.4	2	0.9

SECTION 2. These questions pertain to your feelings in general about trout fishing. Please circle the number that b

Appendix B. Continued.

describes your feelings.

1. I enjoy eating the trout I catch.

	Strongly Disagree		Disagree		Undecided		Agree		Strongly Agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
Section 1	0	0	1	0.5	0	0	3	1.4	3	1
Section 2	1	0.5	3	1.4	0	0	6	2.8	2	0
Section 3	7	3.2	6	2.8	5	2.3	28	12.8	15	6
Section 4	32	14.7	45	20.6	8	3.7	44	20.2	9	4

2. I would rather catch one trophy trout than my limit of average size trout.

	Strongly Disagree		Disagree		Undecided		Agree		Strongly Agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
Section 1	0	0	3	1.4	0	0	4	1.8	0	0
Section 2	0	0	5	2.3	1	0.5	3	1.4	4	1
Section 3	6	2.7	14	6.3	11	5.0	20	9.1	12	5
Section 4	10	4.5	23	10.4	23	10.4	47	21.3	35	1

3. I often share my trout catch with others.

	Strongly Disagree		Disagree		Undecided		Agree		Strongly Agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
Section 1	3	1.4	1	0.5	2	0.9	1	0.5	0	0
Section 2	2	0.9	5	2.3	1	0.5	5	2.3	0	0
Section 3	19	8.7	18	8.2	6	2.7	14	6.4	6	2
Section 4	67	30.6	41	18.7	13	5.9	12	5.5	3	1

4. I consider my fishing trip to be worthwhile, only if I catch trout.

	Strongly Disagree		Disagree		Undecided		Agree		Strongly Agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
Section 1	1	0.5	3	1.4	1	0.5	1	0.5	1	0
Section 2	2	0.9	4	1.8	2	0.9	5	2.3	0	0
Section 3	21	9.5	21	9.5	4	1.8	8	3.6	8	3
Section 4	26	11.8	39	17.7	15	6.79	36	16.3	23	1

5. I release most of the trout I catch.

	Strongly Disagree		Disagree		Undecided		Agree		Strongly Agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
Section 1	0	0	2	0.9	0	0	4	1.8	1	0
Section 2	0	0	2	0.9	0	0	5	2.3	6	2
Section 3	1	0.5	3	1.4	2	0.9	27	12.5	29	1
Section 4	9	4.2	6	2.8	1	0.5	28	13.0	90	4

6. I release all the trout I catch.

	Strongly Disagree		Disagree		Undecided		Agree		Strongly Agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
Section 1	0	0	6	2.7	0	0	0	0	1	0
Section 2	1	0.5	6	2.7	0	0	3	1.4	3	1
Section 3	10	4.5	22	10.0	4	1.8	8	3.6	18	8
Section 4	1	0.5	23	10.4	3	1.4	24	10.9	88	3

Appendix B. Continued.

7. Catching a limit of trout is important to me.

	No.	%	No.	%	No.	%	No.	%	No.	%
Section 1	2	0.9	3	1.4	0	0	2	0.9	0	0
Section 2	4	1.8	5	2.3	3	1.4	1	0.5	0	0
Section 3	20	9.1	23	10.5	4	1.8	13	5.9	3	1.
Section 4	68	30.9	49	22.3	13	5.9	5	2.3	2	0.

8. I enjoy catching more trout than my friends.

	No.	%	No.	%	No.	%	No.	%	No.	%
Section 1	2	0.9	2	0.9	1	0.5	2	0.9	0	0
Section 2	1	0.5	5	2.3	2	0.9	4	1.8	0	0
Section 3	9	4.1	15	6.9	7	3.2	18	8.3	13	6.
Section 4	24	11.0	28	12.8	27	12.4	38	17.4	20	9.

9. I often keep all the trout I catch up to the legal limit.

	No.	%	No.	%	No.	%	No.	%	No.	%
Section 1	1	0.5	2	0.9	0	0	4	1.8	0	0
Section 2	7	3.1	3	1.4	0	0	2	0.9	0	0
Section 3	26	11.7	24	10.8	3	1.4	8	3.6	2	0.
Section 4	101	45.3	28	12.6	2	0.9	9	4.0	1	0.

10. I feel stocked trout are as enjoyable to catch as wild trout.

	No.	%	No.	%	No.	%	No.	%	No.	%
Section 1	2	0.9	2	0.9	0	0	2	0.9	1	0.
Section 2	2	0.9	3	1.4	1	0.5	6	2.7	1	0.
Section 3	14	6.3	10	4.5	11	4.9	17	7.6	11	4.
Section 4	47	21.0	39	17.4	24	10.7	22	9.8	9	4.

11. Fishing in stocked waters gives me a greater chance of catching trout.

	No.	%	No.	%	No.	%	No.	%	No.	%
Section 1	0	0	2	0.9	1	0.5	3	1.4	0	0
Section 2	0	0	5	2.2	2	0.9	5	2.2	1	0.
Section 3	7	3.1	1	0.5	10	4.5	30	13.5	15	13
Section 4	21	9.4	23	10.3	40	17.9	48	21.5	9	4.

12. I try to fish streams shortly after they are stocked with trout.

	No.	%	No.	%	No.	%	No.	%	No.	%
Section 1	2	0.9	4	1.8	1	0.5	0	0	0	0
Section 2	3	1.4	6	2.7	1	0.5	3	1.4	0	0
Section 3	16	7.2	27	12.1	14	6.3	4	1.8	1	0.
Section 4	66	29.6	50	22.4	22	9.9	3	1.4	0	0

13. Stocking is important to maintain good trout fishing.

	No.	%	No.	%	No.	%	No.	%	No.	%
Section 1	1	0.5	0	0	2	0.9	2	0.9	2	0.
Section 2	3	1.4	1	0.5	1	0.5	8	3.6	0	0

Section 3	3	1.4	4	1.8	15	6.7	29	13.0	12	5
Section 4	43	19.3	17	7.6	44	19.7	26	11.7	10	4

14. How would you compare the number of trout you catch to that of other anglers? (Please check one)

	Section 1		Section 2		Section 3		Section 4	
	No.	%	No.	%	No.	%	No.	%
___ much less	0	0	1	0.5	5	2.3	1	0.5
___ less	1	0.5	3	1.4	7	3.2	14	6.3
___ same	3	1.4	4	1.8	22	10.0	47	21.3
___ more	2	0.9	5	2.3	18	8.1	61	27.6
___ much more	1	0.5	0	0	10	4.5	16	7.2

15. Do you belong to a local sportsman club (ie. rod and gun club or fishing club)?

	Section 1		Section 2		Section 3		Section 4	
	No.	%	No.	%	No.	%	No.	%
___ Yes	0	0	1	0.5	2	0.9	19	8.6
___ No	7	3.2	12	5.4	60	27.0	121	54.5

16. Do you belong to a national sportsman group?

	Section 1		Section 2		Section 3		Section 4	
	No.	%	No.	%	No.	%	No.	%
___ Yes	0	0	1	0.5	5	2.2	32	14.3
___ No	7	3.1	12	5.4	58	25.9	109	48.7

17. What sporting magazines or newspapers do you receive? (Please select all that apply)

_A_ Trout _E_ Sports Afield
_B_ Hunting and Fishing News _F_ Idaho Wildlife
_C_ In Fisherman _G_ Field and Stream
_D_ Outdoor Life _H_ Fly Fisherman
_I_ Others (please list) ________________, ____________________, _____________
_J_ None

	Section 1	Section 2	Section 3	Section 4
A	0	0	2	14
B	0	3	2	4
C	0	0	1	3
D	1	1	11	15
E	0	2	0	3
F	0	0	2	6
G	1	2	2	7
H	0	0	2	31
I	1	3	9	8
J	4	10	35	49

18. Where do you receive your information on Idaho's fish and wildlife resources? (Please check all that apply)

Appendix B. Continued.

	Section 1	Section 2	Section 3	Section 4
___ Newspapers	4	5	28	59
___ Radio	0	0	1	1
___ Television	0	0	0	0
___ Regulations brochures	1	9	12	37
___ Brochures/pamphlets	0	2	2	3
___ Local sporting goods store	1	0	8	9
___ Family and friends	0	2	6	20
___ Department publications (Idaho Wildlife Magazine, Fish and Game News)	0	0	3	2
___ Do not know	1	0	0	0
___ Have not received information	0	1	3	2
___ other (please specify	0	1	1	1

SECTION 3. These questions pertain to the section of the St. Joe River ***downstream of Prospector Creek.*** Ple answer the following questions ***<u>even if you do not fish</u>*** the section from Prospector Creek downstreai

1. Do you fish the section of the St. Joe River from old railroad bridge at Fall Creek upstream to Prospector Cre

		Section 1		Section 2		Section 3		Section 4	
		No.	%	No.	%	No.	%	No.	%
___Yes	7	3.2	11	5.0	46	20.7	57	25.7	
___No		0	0	1	0.5	10	4.5	64	28.8
___Don't know		0	0	1	0.5	7	3.2	18	8.1

2. In general, I feel fishing regulations for **this section** of the St. Joe River allow me to keep enough fish. (Please select the one that best describes your feelings)

	Section 1		Section 2		Section 3		Section 4	
	No.	%	No.	%	No.	%	No.	%
___ Strongly disagree	0	0	0	0	2	0.9	5	2.4
___ Disagree	3	1.4	4	1.8	3	1.4	7	3.3
___ Neutral	1	0.5	2	0.9	13	6.1	57	26.8
___ Agree	2	0.9	4	1.8	29	13.6	27	12.7
___ Strongly agree	1	0.5	3	1.4	16	7.5	34	16.0

3. If opportunity to keep fish was eliminated on this section of the St. Joe River **from old railroad bridge at I Creek upstream to Prospector Creek**, how would this change affect your fishing activity in this section? (select the one that best describes your feelings)

	Section 1		Section 2		Section 3		Section 4	
	No.	%	No.	%	No.	%	No.	%
___ I would begin fishing in this section in this section	0	0	1	0.5	3	1.4	40	18.5
___ I would increase my fishing activity in this section	0	0	3	1.4	13	6.0	41	19.0
___ My fishing activity would remain the same in this section	4	1.8	3	1.4	24	11.1	44	20.4

Appendix B. Continued.

___ I would decrease my fishing activity in this section	2	0.9	1	0.5	16	7.4	7	3.2
___ I would stop fishing this section	1	0.5	5	2.3	6	2.8	2	0.9

4. If it were unlawful to use bait **in this section** of the St. Joe River, my fishing effort **on this section** would (Pl select the one that best describes your feelings)

	Section 1		Section 2		Section 3		Section 4	
	No.	%	No.	%	No.	%	No.	%
___ I would stop fishing this portion entirely	1	0.5	3	1.4	9	4.2	0	0
___ Decrease considerably	1	0.5	1	0.5	10	4.6	2	0.9
___ Decrease some	1	0.5	0	0	7	3.2	3	1.4
___ Not change	4	1.9	4	1.9	21	9.7	54	25.0
___ Increase some	0	0	1	0.5	7	3.2	37	17.1
___ Increase considerably	0	0	4	1.9	8	3.7	38	17.6

5. If the number of hatchery trout stocked **in this section** was **decreased,** my fishing effort **on the this section** of the river would (Please select the one that best describes your feelings)

	Section 1		Section 2		Section 3		Section 4	
	No.	%	No.	%	No.	%	No.	%
___ I would stop fishing this portion entirely	0	0	0	0	1	0.5	2	0.9
___ Decrease considerably	0	0	1	0.5	1	0.5	2	0.9
___ Decrease some	2	0.9	1	0.5	9	4.1	14	6.4
___ Stay the same	5	2.3	9	4.1	44	20.1	79	34.1
___ Increase some	0	0	0	0	4	1.8	24	11.0
___ Increase considerably	0	0	2	0.9	4	1.8	15	6.9

6. If hatchery stocking were stopped in this section, how would this change affect your fishing activity on **this section** of the St. Joe River. (Please select the one that best describes your feelings)

	Section 1		Section 2		Section 3		Section 4	
	No.	%	No.	%	No.	%	No.	%
___ I would stop fishing this section	1	0.5	0	0	1	0.5	3	1.4
___ I would decrease my fishing activity	1	0.5	1	0.5	14	6.5	13	6.0
___ My fishing activity would remain the same	5	2.3	10	4.6	42	19.4	79	36.4
___ I would increase my fishing activity	0	0	1	0.5	5	2.3	32	14.8
___ I would begin fishing	0	0	1	0.5	1	0.5	7	3.2

7. Due to the cost of raising hatchery trout ($.60 each to rear and stock), the Department tries to stock trout o where at least 40% of the fish stocked are caught (this costs $1.50 per fish caught). I would support eliminat stocking in the St. Joe River where less than 40% of the fish stocked were caught.

Appendix B. Continued.

	Section 1		Section 2		Section 3		Section 4	
	No.	%	No.	%	No.	%	No.	%
___ Yes	3	1.4	6	2.8	33	15.5	94	44.1
___ No	4	1.9	6	2.8	29	13.6	38	17.8

8. I would support the elimination of stocking hatchery trout in the section of St. Joe River between the old railr bridge at Fall Creek and Prospector Creek, if ponds were constructed along the river and stocked with hatch trout I could keep.

	Section 1		Section 2		Section 3		Section 4	
	No.	%	No.	%	No.	%	No.	%
___ Yes	4	1.9	5	2.4	46	7.7	53	25.4
___ No	3	1.4	7	3.4	45	21.5	76	36.4

SECTION 4. This section pertains **only to the tributaries** of the St. Joe River from ***old railroad bridge at Fall Cr to Prospector Creek.***

1. Do you fish in the tributaries to the St. Joe River between old railroad bridge at Fall Creek and Prospector Cr

	Section 1		Section 2		Section 3		Section 4	
	No.	%	No.	%	No.	%	No.	%
___ Yes	5	2.3	5	2.3	42	19.4	31	14.4
___ No	2	0.9	8	3.7	20	9.3	103	47.7

2. In the last 12 months, how many days have you fished in the tributaries to the St. Joe River between old railr bridge at Fall Creek and Prospector Creek? (Please check one)

	Section 1		Section 2		Section 3		Section 4	
	No.	%	No.	%	No.	%	No.	%
___ 1-5	4	1.9	5	2.4	26	12.2	33	15.5
___ 6-10	1	0.5	1	0.5	7	3.3	1	0.5
___ 11-15	0	0	0	0	3	1.4	0	0
___ 16-20	1	0.5	0	0	1	0.5	0	0
___ 21-25	0	0	0	0	1	0.5	0	0
___ >25	0	0	0	0	2	0.9	1	0.5
___ none	0	0	0	0	0	0	0	0

3. In general, I feel that fishing regulations on the tributaries in **this section** of the St. Joe River allow me to k enough fish (current limit for trout is six fish). (Please select the one that best describes your feelings)

	Section 1		Section 2		Section 3		Section 4	
	No.	%	No.	%	No.	%	No.	%
___ Strongly disagree	0	0	0	0	3	1.4	5	2.4
___ Disagree	1	0.5	2	1.0	2	1.0	2	1.0
___ Neutral	1	0.5	2	1.0	20	9.6	57	27.4
___ Agree	4	1.9	7	3.4	29	13.9	32	15.4
___ Strongly agree	1	0.5	2	1.0	8	3.9	30	14.4

4. If the bag limit was reduced on the tributaries, how would this change affect your fishing activity in these streams? (Please select the one that best describes your feelings)

Appendix B. Continued.

	Section 1 No.	Section 1 %	Section 2 No.	Section 2 %	Section 3 No.	Section 3 %	Section 4 No.	Section 4 %
___ I would stop fishing this section	2	1.0	1	0.5	1	0.5	2	1.0
___ I would decrease my fishing activity	1	0.5	1	0.5	10	4.8	1	0.5
___ My fishing activity would remain the same	4	1.9	9	4.3	38	18.3	82	39.4
___ I would increase my fishing activity	0	0	0	0	11	5.3	29	13.9
___ I would begin fishing	0	0	2	1.0	1	0.5	13	6.3

5. It is important to me to have uniform regulations on the tributaries and the mainstem knowing that harvest may be reduced.

	Strongly Disagree No.	%	Disagree No.	%	Neutral No.	%	Agree No.	%	Strongly Agree No.	%
Section 1	0	0	3	1.3	1	0.5	2	0.9	1	0.5
Section 2	0	0	3	1.3	2	0.9	7	3.1	1	0.5
Section 3	6	2.7	8	3.6	13	5.8	22	9.8	12	5.4
Section 4	10	4.5	19	8.5	40	17.9	34	15.2	29	13.0

6. It is important to me to have the opportunity to harvest a limit of fish in the tributaries knowing that fishing regulations would be more complicated.

	No.	%	No.	%	No.	%	No.	%	No.	%
Section 1	0	0	0	0	2	0.9	4	1.8	1	0.5
Section 2	3	1.3	3	1.3	2	0.9	4	1.8	0	0
Section 3	11	4.9	16	7.1	21	9.4	7	3.1	5	2.2
Section 4	55	24.6	29	13.0	36	16.1	10	4.5	2	0.9

SECTION 5. These questions pertain to **guided fishing trips** on the St. Joe River. (Please circle the number that best describes your feelings).

Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree

1. Commercially **guided walk and wade** fishing trips are appropriate on the St. Joe River.

	Strongly Disagree No.	%	Disagree No.	%	Neutral No.	%	Agree No.	%	Strongly Agree No.	%
Section 1	4	1.8	2	0.9	0	0	1	0.5	0	0
Section 2	4	1.8	5	2.3	3	1.4	1	0.5	0	0
Section 3	19	8.7	16	7.3	17	7.8	8	3.7	1	0.5
Section 4	43	19.6	17	7.8	34	15.5	34	15.5	10	4.6

2. Commercially **guided float boat** fishing trips are appropriate on the St. Joe River.

	No.	%	No.	%	No.	%	No.	%	No.	%

Appendix B. Continued.

Section 1	6	2.7	1	0.5	0	0	0	0	0	0
Section 2	5	2.3	5	2.3	3	1.4	0	0	0	0
Section 3	26	11.9	15	6.9	10	4.6	8	3.7	2	0.9
Section 4	60	27.4	23	10.5	32	14.6	20	9.1	3	1.4

3. The number of guided fishing trips on the St. Joe River is

	too low		just right		too high		don't know	
	No.	%	No.	%	No.	%	No.	%
Section 1	0	0	1	0.5	4	1.9	2	1.0
Section 2	0	0	0	0	4	1.9	9	4.3
Section 3	1	0.5	3	1.4	17	8.1	37	17.5
Section 4	2	1.0	15	7.1	35	16.6	81	38.4

SECTION 6. The following questions pertain to your overall knowledge of the Department of Fish and Game.

1. How well does the Department manage the supply of game fish for fishing in the St. Joe River?

	Poor		Fair		Good		Excellent		Don't know	
	No.	%	No.	%	No.	%	No.	%	No.	%
Section 1	0	0	4	1.8	2	0.9	0	0	1	0.5
Section 2	2	0.9	5	2.2	4	1.8	0	0	2	0.9
Section 3	4	1.8	6	2.7	26	11.7	13	5.8	14	6.3
Section 4	2	0.9	8	3.6	67	30.0	24	10.8	39	17.5

2. How well does the Department manage and protect the fish resources in the St Joe River?

	No.	%	No.	%	No.	%	No.	%	No.	%
Section 1	2	0.9	1	0.5	3	1.4	0	0	1	0.5
Section 2	5	2.2	1	0.5	2	0.9	1	0.5	4	1.8
Section 3	7	3.1	6	2.7	27	12.1	10	4.5	13	5.8
Section 4	6	2.7	21	9.4	57	25.6	27	12.1	29	13.0

3. How well does the Department manage and protect fish habitat in the St. Joe River?

	No.	%	No.	%	No.	%	No.	%	No.	%
Section 1	0	0	3	1.4	3	1.4	0	0	1	0.5
Section 2	3	1.4	2	0.9	3	1.4	1	0.5	4	1.8
Section 3	3	1.4	9	4.0	20	9.0	18	8.1	13	5.8
Section 4	6	2.7	14	6.3	51	22.9	34	15.3	35	15.7

4. How well has the Department incorporated sportsmen's wants and needs into management of the St. Joe River?

	No.	%	No.	%	No.	%	No.	%	No.	%
Section 1	0	0	5	2.2	0	0	1	0.5	1	0.5
Section 2	3	1.4	4	1.8	2	0.9	0	0	4	1.8
Section 3	3	1.4	11	4.9	24	10.8	11	4.9	14	6.3
Section 4	3	1.4	13	5.8	55	24.7	20	9.0	49	22.0

SECTION 7. The following questions are optional, but will help us better understand the anglers who fish the St. Joe

Appendix B. Continued.

River drainage.

1. What is your gender?

	Section 1		Section 2		Section 3		Section 4	
	No.	%	No.	%	No.	%	No.	%
___Male	7	3.1	12	5.4	54	24.2	129	57.9
___Female	0	0	1	0.5	8	3.6	12	5.4

2. What is your marital status?

	Section 1		Section 2		Section 3		Section 4	
	No.	%	No.	%	No.	%	No.	%
____ Single	2	0.9	3	1.4	19	8.5	47	21.1
____ Married	5	2.2	10	4.5	43	19.3	94	42.2

3. Do you have any children living at home?

	Section 1		Section 2		Section 3		Section 4		
		No.	%	No.	%	No.	%	No.	%
____ Yes	1	0.5	6	2.7	30	13.5	49	22.0	
____No	6	2.7	7	3.1	32	14.4	92	41.3	

4. Please select the response that best describes the area where you live. (Please check one)

	Section 1		Section 2		Section 3		Section		4
		No.	%	No.	%	No.	%	N o .	
%									
____ rural area	3	1.4	3	1.4	20	9.0	19	8.6	
____ suburb	3	1.4	6	2.7	10	4.5	25	11.3	
____ small town (less than 4,999)	0	0	1	0.5	10	4.5	33	14.9	
____ small city (5,000 to 49,999) 1	0.5	0	0	2	0.9	6	2.7		
____ large city (50,000 to 500,000)	0	0	3	1.4	18	8.1	48	21.6	
____ very large city (over 500,000)	0	0	0	0	1	0.5	10	4.5	

5. What is the highest level of education you have completed? (Please check one)

		Section 1		Section 2		Section 3		Section		4
		No.	%	No.	%	No.	%	No.	%	
some high school		2	0.9	2	0.9	7	3.1	8	3.6	
high school graduate		1	0.5	3	1.4	10	4.5	7	3 .	1
trade or technical school	0	0	2	0.9	6	2.7	9	4.0		
some college		3	1.4	4	1.8	21	9.4	28	12.6	
college graduate	0	0	0	0	10	4.5	49	22.0		
graduate or professional degree		1	0.5	2	0.9	8	3.6	40	17.9	

Appendix B. Continued.

6. Which category best describes your occupation. (Please check one)

	Section 1		Section 2		Section 3		Section 4		
		No.	%	No.	%	No.	%	No.	%
professional/technical	1	0.5	1	0.5	13	5.8	58	26.0	
skilled worker	2	0.9	3	1.4	12	5.4	14	6.3	
skilled worker/operator	2	0.9	1	0.5	9	4.0	8	3.6	
unskilled laborer	0	0	0	0	0	0	1	0.5	
clerical/sales	0	0	1	0.5	1	0.5	4	1.8	
logger	0	0	2	0.9	1	0.5	1	0.5	
miner	0	0	0	0	0	0	0	0	
service worker	0	0	0	0	1	0.5	4	1.8	
farmer	0	0	0	0	1	0.5	0	0	
student	0	0	2	0.9	7	3.1	11	4.9	
retired	2	0.9	2	0.9	5	2.2	15	6.7	
housewife	0	0	0	0	2	0.9	1	0.5	
self-employed	0	0	1	0.5	5	2.2	16	7.2	
other	0	0	0	0	0	0	0	0	

7. Please give your age. _________ Years

	Section 1	Section 2	Section 3	Section 4
N	7	21	67	141
Minimum	35	16	0	0
Maximum	80	70	76	79
Median	51	46	38	42
Mean	53	45.5	38.6	42.2
Std. error	6.5	3.4	1.7	1.2

Thank you for your time and assistance in completing this questionnaire. Your assistance will help expand our understanding of the men and women involved with the fishing in the Spokane drainage.

Appendix C. Summary of angler opinion survey for the North Fork Coeur d'Alene River, Idaho, 1996

SPOKANE RIVER DRAINAGE ANGLER SURVEY

SECTION 1. These questions pertain to the **North Fork Coeur d'Alene River only.**

1. How many years have you fished the North Fork Coeur d'Alene River at least once?

N of cases	116
Minimum	0.0
Maximum	70.000
Median	5.000
Std. Error	1.098

2. How many days in the past 5 years have you fished the North Fork Coeur d'Alene River? (Please check one)

31-26.7% 1-5
16-13.8% 6-10
13-11.2% 11-15
8-6.9% 16-20
9-7.85 21-25
38-33.6% more than 25
________ none
Total 116

3. How many days have you fished the North Fork Coeur d'Alene River in the last 12 months? _____days

N of cases	114
Minimum	1.000
Maximum	90.000
Median	5.000
Mean	10.605
Std. Error	1.365

4. Do you fish on the North Fork Coeur d'Alene River (less often___, same___, more often___) now as you did in previous years?

Count	Cum Count	Pct	Cum Pct	
34.	34.	31.8	31.8	Less
28.	62.	26.2	57.9	More
45.	107.	42.1	100.0	Same

5. What type (s) of tackle do you fish with **most often** on the North Fork Coeur d'Alene River? (Please check one).

Count	Cum Count	Pct	Cum Pct	
25.	25.	23.8	23.8	Bait
65.	90.	61.9	85.7	Flies
15.	105.	14.3	100.0	Lures

Appendix C. Continued.

6. Which section of the North Fork Coeur d'Alene River do you most **prefer** to fish? (Please check one)

Count	Cum Count	Pct	
40.	40.	34.8	Yellow Dog Cr. downstream
33.	73.	28.7	Yellow Dog Cr. upstream.
10.	83.	8.7	Tributaries N. F. Coeur d'Alene River below Yellow Dog Creek
32.	115.	27.8	No preference

Why do you prefer to fish in this section? (Please select all that apply) N=110

46 number of fish caught
35 type of fish
36 distance from home
48 type of water
24 closeness to a road
20 closeness to a campground
34 other (please specify)________________________.
45 size of fish
40 fewer of people
29 type of fishing regulations
6 access
12 lack of a road
14 area is stocked with hatchery trout

7. Some anglers may **prefer** to fish one area but **actually fish** in another. In the last five years, which section of the North Fork Coeur d'Alene River did you **most often** fish? (Please check one)

Count	Cum Count	Pct	
53.	53.	47.7	Yellowdog Cr. downstream
29.	82.	26.0	Yellowdog Cr. upstream
13.	95.	11.7	Tributaries to the N.F. Coeur d'Alene River below Yellow Dog Creek
16.	111.	14.4	All equally

Why did you actually fish this section most often? (Please select all that apply)

41 number of fish caught
33 type of fish
39 distance from home
44 type of water
26 closeness to a road
20 closeness to a campground
26 other (please specify)________________________.
31 size of fish
40 fewer of people
21 type of fishing regulations
4 access
8 lack of a road
7 area is stocked with hatchery trout

Please circle the number that best describes your feelings.

		Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
8 .	I feel that fishing regulations for the North Fork Coeur d'Alene River are difficult to understand.	21 18.3%	58 50.4%	12 10.4%	17 14.8%	7 6.1%
9.	The current fishing regulations on the North Fork Coeur d'Alene River are easy to follow.	9 7.8%	15 13.0%	10 8.7%	66 57.4%	15 13.0%

Appendix C. Continued.

10. Are you familiar with the Fish and Game special brochure on fishing in the Spokane River drainage?
19.8% ___ Yes
80.2% ___ No

If yes, Please rate the usefulness of this brochure to you in understanding the fishing regulations on the North Fork Coeur d'Alene River?
3.7% __ Poor 29.6% __Fair 44.4% __Good 22.2% __ Excellent n=27

_Please circle the number that best describes your feelings.

		Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
11.	I feel it is important to allow catch-and-release fishing on a portion of the North Fork Coeur d'Alene River.	5 4.3%	7 6.1%	12 10.4%	33 28.7%	58 50.4%
12.	I would support expanding the catch-and-release section of the North Fork Coeur d'Alene River knowing that the harvest section would be smaller.	17 14.7%	22 20.0%	21 18.1%	20 17.2%	36 31.0%
13.	I think it is important to allow harvest fishing on a portion of the North Fork Coeur d'Alene River.	11 9.5%	8 6.9%	16 13.8%	55 47.4%	26 22.4%
14.	I would support expanding the harvest section of the North Fork Coeur d'Alene River knowing that the catch-and-release section would have to become smaller.	36 31.0%	36 31.0%	18 15.6%	23 19.8%	3 2.6%
15.	I would prefer regulations which would result in me catching more fish, even if it meant I could keep fewer fish to take home.	7 6.0%	16 13.8%	24 20.7%	36 31.0%	33 28.4%
16.	I would prefer regulations which allow me to keep more fish now knowing it would result in fewer fish to catch on future trips.	54 47.0%	37 32.2%	15 13.0%	7 6.1%	2 1.7%

Appendix C. Continued.

SECTION 2. These questions pertain to your feelings in general about trout fishing. Please circle the number that best describes your feelings.

		Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
1.	I enjoy eating the trout I catch.	16 13.8%	15 12.9%	5 4.3%	44 37.9%	36 31.0%
2.	I would rather catch one trophy 10 trout than my limit of average size trout.	42 8.6%	9 36.2%	25 7.8%	30 21.56%	25.8%
3.	I often share my trout catch with others.	29 25.2%	40 34.8%	3 2.6%	33 28.7%	10 8.7%
4.	I consider my fishing trip to be worthwhile, only if I catch trout. 18	50 15.5%	6 43.1%	24 5.2%	18 20.7%	15.9%
5.	I release most of the trout I catch.	3 2.6%	15 12.9%	4 3.4%	56 48.3%	38 32.8%
6.	I release all the trout I catch.	17 14.8%	60 52.1%	8 7.0%	3 2.6%	27 23.5%
7.	Catching a limit of trout is important to me.	6 31.6%	53 46.5%	8 7.0%	15 13.2%	2 1.7%
8.	I enjoy catching more trout than my friends.	19 15.5%	44 38.3%	32 11.3%	22 19.1%	17 14.8%
9.	I often keep all the trout I catch up to the legal limit.	35 30.2%	51 44.0%	2 1.7%	26 22.4%	3 1.7%
10.	I feel stocked trout are as enjoyable to catch as wild trout.	13 11.2%	34 29.3%	22 18.9%	36 31.0%	11 9.5%
11.	Fishing in stocked waters gives me a greater chance of catching trout.	4 3.4%	13 11.2%	15 12.9%	65 56.0%	19 16.4%
12.	I try to fish streams shortly after they stocked with trout.	28 24.0%	60 52.2%	17 14.8%	9 7.8%	1 1.2%
13.	Stocking is important to maintain good trout fishing.	9 7.7	12 10.3	31 26.7	45 38.8	19 16.4

Appendix C. Continued.

14. How would you compare the number of trout you catch to that of other anglers? (Please check one)
Count-percent
5 - 4.4% much less
24 - 21.2% less
41 - 36.3% same
36 - 31.8% more
7 - 6.2% much more

15. Do you belong to a local sportsman club (ie. rod and gun club or fishing club)
8 - 6.9% Yes (please list) ___Shoshone County Sportsman Assoc.
___St. Maries Sportsman Assoc
3 North Idaho Fly Casters
______________________(others)
108 - 93.1% No

16. Do you belong to a National sportsman group?
11 - 9.5% Yes (Please list) 2 Trout Unlimited (Chapter___________)
2 Federation of Fly Fishers
2 Other (please specify)________________________

105 - 90.5% No

17. What sporting magazines or newspapers do you receive? (Please select all that apply)

5 Trout	31 Sports Afield	16 Field and Stream
7 Hunting and Fishing News	25 Idaho Wildlife	49 Fly Fisherman
2 In Fisherman	23 Outdoor Life	

14 Others (please list) ________________, ____________________, ____________
3 None

18. Where do you receive your information on Idaho's fish and wildlife resources? (Please check all that apply)
49 Newspapers
6 Radio
15 Television
76 Regulations brochures
27 Brochures/pamphlets
56 Local sporting goods store
65 Family and friends
18 Department publications (Idaho Wildlife Magazine, Fish and Game News)
1 Do not know
6 Have not received information
10 other (please specify ______________________________________)

Appendix C. Continued.

SECTION 3. These questions pertain to the section of the North Fork Coeur d'Alene River ***downstream of Yellow Dog Creek.*** Please answer the following questions ***even if you do not fish*** the section from Yellow Dog Creek downstream.

1. Do you fish the section of the North Fork Coeur d'Alene River **downstream from Yellow Dog Creek**?
   91 - 79% Yes
   19 - 15.7% No
   6 - 5.2% Don't know

2. In general, I feel fishing regulations for **this section** of the North Fork Coeur d'Alene River allow me to keep enough fish. (Please select the one that best describes your feelings)
   9 - 7.9% Strongly disagree
   18 - 15.7% Disagree
   19 - 16.7% Neutral
   50 - 43.9% Agree
   18 - 15.7% Strongly agree

3. If the number of hatchery trout stocked **in this section** was **decreased,** my fishing effort **on the this section** of the river would (Please select the one that best describes your feelings)
   4 - 3.5% I would stop fishing this portion entirely
   13 - 11.5% Decrease considerably
   23 - 20.3% Decrease some
   67 - 59.3% Stay the same
   5 - 4.4% Increase some
   1 - 0.9% Increase considerably

4. If hatchery stocking were stopped in this section, how would this change affect your fishing activity on **this section** of the North Fork Coeur d'Alene River. (Please select the one that best describes your feelings)
   7 - 6.1% I would stop fishing this section
   23 - 20.3% I would decrease my fishing activity
   74 - 64.9% My fishing activity would remain the same
   8 - 7.0% I would increase my fishing activity
   2 - 1.8% I would begin fishing

5. Due to the cost of raising hatchery trout ($.60 each to rear and stock), the Department tries to stock trout only where at least 40% of the fish stocked are caught (this costs $1.50 per fish caught). I would support eliminating stocking in the North Fork Coeur d'Alene River where less than 40% of the fish stocked were caught.
   52 - 46% Yes
   61 - 77.5% No

6. I would support the elimination of stocking hatchery trout in the section of North Fork Coeur d'Alene River ***from Yellow Dog Creek downstream***, if ponds were constructed along the river and stocked with hatchery trout I could keep.
   25 - 22.5% Yes
   86 - 77.5% No

7. If opportunity to keep fish was eliminated on the section of the North Fork Coeur d'Alene River ***from Yellow Dog Creek downstream to Lost Creek***, how would this change affect your fishing activity in this section? (Please select the one that best describes your feelings)
   7 - 6.1% I would begin fishing in this section in this section
   17 - 14.9% I would increase my fishing activity in this section
   47 - 41.2% My fishing activity would remain the same in this section
   20 - 17.5% I would decrease my fishing activity in this section
   23 - 20.2% I would stop fishing this section

8. If it were unlawful to use bait in the North Fork Coeur d'Alene River ***from Yellow Dog Creek downstream to Lost Creek***, my fishing effort **on this section** would (Please select the one that best describes your feelings)
   10 - 8.8% I would stop fishing this portion entirely
   14 - 12.3% Decrease considerably
   16 - 14.0% Decrease some
   48 - 42.1% Not change
   13 - 11.4% Increase some
   13 - 11.4% Increase considerably

SECTION 4. This section pertains **only to the tributaries** of the North Fork Coeur d'Alene River from ***Yellow Dog Creek downstream.***

1. Do you fish in the tributaries to the North Fork Coeur d'Alene River downstream of Yellow Dog Creek?
   54 - 47% Yes
   61 - 53% No

2. In the last 12 months, how many days have you fished in the tributaries to the North Fork Coeur d'Alene River downstream of Yellow Dog Creek? (Please check one)
   36 - 32.4% 1-5
   11 - 9.9% 6-10
   5 - 4.5% 11-15
   2 - 1.8% 16-20
   1 - 0.9% 21-25
   3 - 2.7% more than 25
   53 - 47.7% none

3. In general, I feel that fishing regulations on the tributaries in **this section** of the North Fork Coeur d'Alene River allow me to keep enough fish (current limit for trout is six fish). (Please select the one that best describes your feelings)
   5 - 4.6% Strongly disagree
   2 - 1.8% Disagree
   36 - 33.0% Neutral
   46 - 42.2% Agree
   20 - 18.3% Strongly agree

Appendix C. Continued.

4. If the bag limit was reduced on the tributaries, how would this change affect your fishing activity in these streams? (Please select the one that best describes your feelings)

<u>6 - 5.6%</u> I would stop fishing this section
<u>11 - 10.2%</u> I would decrease my fishing activity
<u>80 - 74.0%</u> My fishing activity would remain the same
<u>5 - 4.6%</u> I would increase my fishing activity
<u>6 - 5.6%</u> I would begin fishing

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
5.	It is important to me to have uniform regulations on the tributaries and the mainstem knowing that harvest may be reduced.	4 3.7%	14 13.1%	31 29.0%	42 39.2%	16 15.0%
6.	It is important to me to have the opportunity to harvest a limit of fish in the tributaries knowing that fishing regulations would be more complicated.	21 19.8%	39 36.8%	26 24.5%	16 15.1%	4 3.8%

SECTION 5. These questions pertain to **guided fishing trips** on the North Fork Coeur d'Alene River. (Please circle the number that best describes your feelings).

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1.	Commercially **guided walk and wade** fishing trips are appropriate on the North Fork Coeur d'Alene River.	39 36.1%	26 25.9%	23 19.4%	15 13.9%	5 4.6%
2.	Commercially **guided float boat** fishing trips are appropriate on the North Fork Coeur d'Alene River.	46 42.6%	28 25.9%	21 19.4%	10 9.3%	3 2.8%

3. The number of guided fishing trips on the North Fork Coeur d'Alene River is

too low <u>4 - 3.6%</u>
just right <u>9 - 8.2%</u>
too high <u>17 - 15.5%</u>
don't know <u>80 - 73.7%</u>

Appendix C. Continued.

SECTION 6. The following questions pertain to your overall knowledge of the Department of Fish and Game.

		Poor	Fair	Good	Excellent	Don't know
1.	How well does the Department manage the supply of game fish for fishing in the North Fork Coeur d'Alene River?	4 3.4%	28 24.3%	37 32.2%	10 8.7%	36 31.3%
2.	How well does the Department manage and protect the fish resources in the North Fork Coeur d'Alene River?	9 7.9%	15 13.2%	42 36.8%	20 17.5%	28 24.6%
3.	How well does the Department manage and protect fish habitat in the North Fork Coeur d'Alene River?	12 10.5%	19 16.7%	40 35.1%	15 13.1%	28 24.6%
4.	How well has the Department incorporated sportsmen's wants and needs into management of the North Fork Coeur d'Alene River?	10 8.7%	22 19.1%	33 28.7%	15 13.0%	35 30.4%

SECTION 7. The following questions are optional, but will help us better understand the anglers who fish the North Fork Coeur d'Alene River drainage.

1. What is your gender? 107 - 93.9% Male 7 - 6.1% Female

2. What is your marital status?
33 - 29.9% Single
81 - 71.1% Married

3. Do you have any children living at home?
44 - 38.6% Yes
70 - 61.4% No

4. Please select the response that best describes the area where you live. (Please check one)
13 - 11.4% rural area
7 - 6.1% suburb
31 - 27.2% small town (less than 4,999)
53 - 37.7% small city (5,000 to 49,999)
18 - 15.8% large city (50,000 to 500,000)
2 - 1.8% very large city (over 500,000)

5. What is the highest level of education you have completed? (Please check one)
5 - 4.4% some high school
42 - 36.8% some college
13 - 11.4% high school graduate
23 - 20.2% college graduate
14 - 12.3% trade or technical school
17 - 14.9% graduate or professional degree

Appendix C. Continued.

6. Which category best describes your occupation. (Please check one)

26 - 22.8% professional/technical (doctor, lawyer etc)
30 - 26.3% skilled worker
15 - 13.1% skilled worker/operator
2 - 1.8% unskilled laborer
3 - 2.6% clerical/sales
1 - 0.9% logger
0 miner
1 - 0.9% service worker
0 farmer
1 - 0.9% student
13 - 11.4% retired
0 housewife
12 - 10.5% self-employed business
10 - 8.8% other

7. Please give your age. (Years)

N	113	Minimum	18
Maximum	80	Median 40.0	
Mean	41.6	Std. Error	1.4

Appendix D. Summary of angler opinion survey for the St. Joe River, Idaho, 1996.

SPOKANE RIVER DRAINAGE ANGLER SURVEY

SECTION 1. These questions pertain to the **ST. JOE RIVER only.**

1. How many years have you fished the St. Joe River at least once?_______years

N of cases	224	Mean	10.397
Minimum	0.0	SEM	0.806
Maximum	66.000	Median	6.0

2. How many days in the past 5 years have you fished the St. Joe River? (Please check one)
   53 - 23.9% 1-5
   33 - 14.9% 6-10
   22 - 9.9% 11-15
   16 - 7.2% 16-20
   13 - 5.9% 21-25
   85 - 38.3% more than 25
   ___ none

3. How many days have you fished the St. Joe River in the last 12 months? _____days

N of cases	223	Median	5
Minimum	1.000	Mean	8.444
Maximum	60.000	SEM	0.569

4. Do you fish on the St. Joe River (less often___, same___, more often___) now as you did in previous years?
   Less 38 - 18.1%
   Same 97 - 46.2%
   More 75 - 35.7%

5. What type (s) of tackle do you fish with **most often** on the St. Joe River? (Please check one)
   22 - 10.3% bait
   24 - 11.2% lures
   168 - 78.5% flies

6. Which section of the St. Joe River do you most **prefer** to fish? (Please check one)
   40 - 19.4% Prospector Cr. downstream
   91 - 44.2% Prospector Cr. up to Spruce Tree CG
   31 - 15.0% Spruce Tree CG upstream
   33 - 16.0% No preference
   5 - 2.4% Marble Cr.
   4 - 1.9% North Fork St. Joe
   2 - 1.0% other tributaries

Appendix D. Continued.

Why do you prefer to fish in this section? (Please select all that apply)

117 number of fish caught	77 size of fish
71 type of fish	87 fewer of people
23 distance from home	41 type of fishing regulations
109 type of water	27 access
30 closeness to a road	9 lack of a road
42 closeness to a campground	21 area is stocked with hatchery trout
81 other (please specify)________________.	

7. Some anglers may **prefer** to fish one area but **actually fish** in another. In the last five years, which section of the St. Joe River did you **most often** fish? (Please check one)

52 - 25.2% Prospector Cr. downstream	6 - 2.9% Marble Cr.
104 - 50.4% Prospector Cr. up to Spruce Tree CG	8 - 3.9% North Fork St. Joe
19 - 9.2% Spruce Tree CG upstream	2 - 0.9% other tributaries
15 - 7.3% all equally	

Why did you actually fish this section most often? (Please select all that apply)

101 number of fish caught	61 size of fish
52 type of fish	71 fewer of people
28 distance from home	44 type of fishing regulations
92 type of water	13 access
36 closeness to a road	7 lack of a road
44 closeness to a campground	25 area is stocked with hatchery trout
66 other (please specify)________________.	

Please circle the number that best describes your feelings.

		Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
8.	I feel that fishing regulations for the St. Joe River are difficult to understand.	74 33.3%	112 50.5%	11 4.9%	19 8.6%	6 .7%
9.	The current fishing regulations on the St. Joe River are easy to follow.	11 5.0%	16 7.2%	12 5.4%	124 56.1%	58 26.2%

10. Are you familiar with the Fish and Game special brochure on fishing in the Spokane River drainage?
37 -16.6% Yes
186 - 83.4% No

If yes, Please rate the usefulness of this brochure to you in understanding the fishing regulations on the St. Joe River?
1 Poor 5 Fair 26 Good 5 Excellent

Appendix D. Continued.

Please circle the number that best describes your feelings.

		Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
11.	I feel it is important to allow catch-and-release fishing on a portion of the St. Joe River.	5 2.2%	2 0.9%	7 3.1%	44 19.7%	165 74.0%
12.	I would support expanding the catch-and-release section of the St. Joe River knowing that the harvest section would be smaller.	25 11.2%	25 11.2%	22 9.8%	34 15.2%	118 52.7%
13.	I think it is important to allow harvest fishing on a portion of the St. Joe River.	33 14.8%	26 11.7%	29 13.1%	96 43.2%	38 17.1%
14.	I would support expanding the harvest section of the St. Joe River knowing that the catch-and-release section would have to become smaller.	135 60.5%	55 24.7%	13 5.8%	10 4.5%	10 4.5%
15.	I would prefer regulations which would result in me catching more fish, even if it meant I could keep fewer fish to take home.	1226 5.4%	19 11.8%	53 8.6%	111 24.0%	50.2%
16.	I would prefer regulations which allow me to keep more fish now knowing it would result in fewer fish to catch on future trips.	153 68.9%	51 23.0%	9 4.1%	5 2.2%	4 1.8%

SECTION 2. These questions pertain to your feelings in general about trout fishing. Please circle the number that best describes your feelings.

		Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
1.	I enjoy eating the trout I catch.	40 18.4%	55 25.2%	13 6.0%	81 37.1%	29 13.3%
2.	I would rather catch one trophy trout than my limit of average size trout.	16 7.2%	45 20.3%	35 15.8%	74 33.4%	51 23.1%
3.	I often share my trout catch with others.	91 41.6%	65 29.7%	22 10.1%	32 16.6%	9 4.1%

Appendix D. Continued.

		Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
4.	I consider my fishing trip to be worthwhile, only if I catch trout.	50 22.6%	67 30.3%	22 10.0%	50 32 22.6%	14.5%
5.	I release most of the trout I catch. 29.6% 58.3%	10	13	3 4.6%	64 126 6.0%	1 . 3 %
6.	I release all the trout I catch.	5.4%	12 25.8%	57 3.1%	7 35 15.8%	110 49.8%
7.	Catching a limit of trout is important to me. 2.3%	94	80 42.7%	20 36.3%	21 5 9.1%	9 . 6 %
8.	I enjoy catching more trout than my friends. 28.4% 15.1%	36	50	37 16.5%	62 33 22.9%	1 7 . 0 %
9.	I often keep all the trout I catch up to the legal limit. 1.4%	135	57 60.5%	5 25.6%	23 3 2.2%	1 0 . 3 %
10.	I feel stocked trout are as enjoyable to catch as wild trout. 9.8%	65	54 29.0%	36 24.1%	47 22 16.1%	2 1 . 0 %
11.	Fishing in stocked waters gives me a greater chance of catching trout.	28 12.6%	31 13.9%	53 23.8%	86 25 38.6%	11.2%
12.	I try to fish streams shortly after they are stocked with trout. 4.5% 0.5%	87	87	38 39.0%	10 1 39.0%	1 7 . 0 %
13.	Stocking is important to maintain good trout fishing. 29.1% 10.8%	50	22	62 22.4%	65 24 9.9%	2 7 . 8 %

14. How would you compare the number of trout you catch to that of other anglers? (Please check one)
7 - 3.1% much less
25 - 11.3%less
76 - 34.4%same
86 - 38.9% more
27 - 12.2% much more

Appendix D. Continued.

15. Do you belong to a local sportsman club (i.e., Rod and Gun Club or North Idaho Flycaster's Club)

22 - 9.9 Yes (please list)
- ___Shoshone County Sportsman Assoc.
- ___St. Maries Sportsman Assoc
- 3___North Idaho Fly Casters
- ______________________(others)

200 - 90.1% No

16. Do you belong to a National sportsman group?

38 - 17% Yes (Please list)
- 3___ Trout Unlimited (Chapter__________)
- 2___ Federation of Fly Fishers
- ___ Other (please specify) ______________________

186 - 83% No

17. What sporting magazines or newspapers do you receive? (Please select all that apply)

17 Trout 12 Outdoor Life 16 Sports Afield 37 Field and Stream

10 Hunting and Fishing News 35 Idaho Wildlife 93 Fly Fisherman

6 In Fisherman

33 Others (please list) ______________, ________________, ___________

12 None

18. Where do you receive your information on Idaho's fish and wildlife resources? (Please check all that apply)

93 Newspapers

21 Radio

21 Television

132 Regulations brochures

62 Brochures/pamphlets

104 Local sporting goods store

136 Family and friends

59 Department publications (Idaho Wildlife Magazine, Fish and Game News)

3 Do not know

7 Have not received information

16 other (please specify ____________________________________)

SECTION 3. These questions pertain to the section of the St. Joe River ***downstream of Prospector Creek.*** Please answer the following questions ***<u>even if you do not fish</u>*** the section from Prospector Creek downstream.

1. Do you fish the section of the St. Joe River from old railroad bridge at Fall Creek upstream to Prospector Creek?

121 - 54.6% Yes

75 - 33.4% No

26 - 11.7% Don't know

Appendix D. Continued.

2. In general, I feel fishing regulations for **this section** of the St. Joe River allow me to keep enough fish. (Please select the one that best describes your feelings)
   7 - 3.3% Strongly disagree
   17 - 8.0% Disagree
   73 - 34.3% Neutral
   62 - 29.1% Agree
   54 - 25.5% Strongly agree

3. If opportunity to keep fish was eliminated on this section of the St. Joe River **from old railroa bridge at Fall Creek upstream to Prospector Creek**, how would this change affect your fishin activity in this section? (Please select the one that best describes your feelings)
   44 - 20.4% I would begin fishing in this section in this section
   57 - 26.4% I would increase my fishing activity in this section
   75 - 34.7% My fishing activity would remain the same in this section
   26 - 12.0% I would decrease my fishing activity in this section
   14 - 6.5% I would stop fishing this section

4. If it were unlawful to use bait **in this section** of the St. Joe River, my fishing effort **on this sectio** would (Please select the one that best describes your feelings)
   13 - 6.0% I would stop fishing this portion entirely
   13 - 6.5% Decrease considerably
   11 - 5.1% Decrease some
   83 - 38.4% Not change
   45 - 20.8% Increase some
   50 - 23.2% Increase considerably

5. If the number of hatchery trout stocked **in this section** was **decreased,** my fishing effort **on the thi section** of the river would (Please select the one that best describes your feelings)
   3 - 1.4% I would stop fishing this portion entirely
   4 - 1.8% Decrease considerably
   26 - 11.9% Decrease some
   137 - 62.6% Stay the same
   28 - 12.8% Increase some
   21 - 9.6% Increase considerably

6. If hatchery stocking were stopped in this section, how would this change affect your fishing activit on **this section** of the St. Joe River. (Please select the one that best describes your feelings)
   5 - 2.3% I would stop fishing this section
   29 - 13.4% I would decrease my fishing activity
   136 - 62.7% My fishing activity would remain the same
   38 - 17.5% I would increase my fishing activity
   9 - 4.5% I would begin fishing

7. Due to the cost of raising hatchery trout ($.60 each to rear and stock), the Department tries to stoc trout only where at least 40% of the fish stocked are caught (this costs $1.50 per fish caught).

Appendix D. Continued.

I would support eliminating stocking in the St. Joe River where less than 40% of the fish stocked were caught.
136 - 63.9% Yes
77 - 36.1% No

8. I would support the elimination of stocking hatchery trout in the section of St. Joe River between the old railroad bridge at Fall Creek and Prospector Creek, if ponds were constructed along the river and stocked with hatchery trout I could keep.
78 - 37.3% Yes
131 - 62.7% No

SECTION 4. This section pertains **only to the tributaries** of the St. Joe River from ***old railroad bridge at Fall Creek to Prospector Creek.***

1. Do you fish in the tributaries to the St. Joe River between old railroad bridge at Fall Creek and ProspectorCr.?
83 - 38.4% Yes
133 - 61.6%No

2. In the last 12 months, how many days have you fished in the tributaries to the St. Joe River between old railroad bridge at Fall Creek and Prospector Creek? (Please check one)
68 - 31.9% 1-5
10 - 4.7% 6-10
3 - 1.4%11-15
2 - 0.9%16-20
1 - 0.5%21-25
3 - 1.4% more than 25
126 - 59.2% none

3. In general, I feel that fishing regulations on the tributaries in **this section** of the St. Joe River allow me to keep enough fish (current limit for trout is six fish). (Please select the one that best describes your feelings)
8 - 3.9% Strongly disagree
7 - 3.4% Disagree
80 - 38.5% Neutral
72 - 34.6% Agree
41 - 19.7% Strongly agree

4. If the bag limit was reduced on the tributaries, how would this change affect your fishing activity in these streams? (Please select the one that best describes your feelings)
6 - 2.9% I would stop fishing this section
13 - 6.3% I would decrease my fishing activity
133 - 63.9% My fishing activity would remain the same
40 - 19,2% I would increase my fishing activity
16 - 7.7% I would begin fishing

Appendix D. Continued.

			Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
5.	It is important to me to have uniform regulations on the tributaries and the mainstem knowing that harvest may be reduced.	7.5%	16 15.5%	33 26.3%	56 39.5%	65 20.2%	43
6.	It is important to me to have the opportunity to harvest a limit of fish in the tributaries knowing that fishing regulations would be more complicated.		69 32.7%	48 22.7%	61 28.9%	25 11.8%	8 3.7%

SECTION 5. These questions pertain to **guided fishing trips** on the St. Joe River. (Please circle the number that best describes your feelings).

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1.	Commercially **guided walk and wade** fishing trips are appropriate on the St. Joe River.	70 33.0%	40 18.3%	54 24.7%	44 20.1%	11 5.0%
2.	Commercially **guided float boat** fishing trips are appropriate on the St. Joe River.	97 44.3%	44 20.1%	45 20.6%	28 12.8%	5 2.3%

3. The number of guided fishing trips on the St. Joe River is (too low 3- 1.4%, just right 19- 9%, too high 19- 28.4%, don't know 129 - 61.1%).

SECTION 6. The following questions pertain to your overall knowledge of the Department of Fish and Game.

			Poor	Fair	Good	Excellent	Don't know
1.	How well does the Department manage the supply of game fish for fishing in the St. Joe River?		8 3.5%	23 10.3%	99 44.4%	37 16.6%	56 25.1%
2.	How well does the Department manage and protect the fish resources in the St Joe River?	20	29 9.0%	89 13.0%	38 39.9%	47 17.4%	21.1%
3.	How well does the Department manage and protect fish habitat in the St. Joe River?	12	28 5.4%	77 12.6%	53 34.6%	53 23.8%	23.8%

Appendix D. Continued.

		Poor	Fair	Good	Excellent	Don't kno
4.	How well has the Department incorporated sportsmen's wants and needs into management of the St. Joe River?	9 4.4%	33 14.8%	81 36.3%	32 14.4%	68 30.5%

SECTION 7. The following questions are optional, but will help us better understand the anglers who fish the St. Jo River drainage.

1. What is your gender? 202 - 90.1% Male 21 - 9.9%Female

2. What is your marital status?
   71 - 31.8% Single
   152 - 68.2%Married

3. Do you have any children living at home?
   86 - 38.6% Yes
   137 - 61.4% No

4. Please select the response that best describes the area where you live. (Please check one)
   45 -20.3% rural area
   9- 4.1% suburb
   44 -19.8% small town (less than 4,999)
   69- 31.1% small city (5,000 to 49,999)
   44 -19.8% large city (50,000 to 500,000)
   11 - 4.9% very large city (over 500,000)

5. What is the highest level of education you have completed? (Please check one)
   19 -8.5% some high school
   56 - 25.1% some college
   21 - 9.4% high school graduate
   59 - 26.5% college graduate
   17 - 7.6% trade or technical school
   51 - 22.9% graduate or professional degree

6. Which category best describes your occupation. (Please check one)
   73 - 32.7% professional/technical (doctor, lawyer etc)
   31 - 13.9% skilled worker
   20 - 9.0% skilled worker/operator
   1 - 0.5% unskilled laborer
   6 - 2.7% clerical/sales
   4 - 1.8 logger
   ____ miner
   5 - 2.2% service worker
   1 - 0.5% farmer
   20 - 9.0% student
   24 -10.8% retired
   3 - 1.4% housewife
   22 - 9.9% self-employed business
   13 - 5.8% other

7. Please give your age. _________ Years

N of cases	222
Minimum	12.000
Maximum	80.000
Median	42.000
Mean	42.005
Std. Error	0.966

Appendix E. Angler responses to the Spokane River drainage angler survey summarized by gear type (bait, fly, lu for the St. Joe River, Idaho, 1996.

SPOKANE RIVER DRAINAGE ANGLER SURVEY

SECTION 1. These questions pertain to the **ST. JOE RIVER only.**

1. How many years have you fished the St. Joe River at least once?_______years

	Number of anglers	Range	Mean	Median
Bait	27	0-39	12	6
Fly	171	0-66	10	5
Lure	26	1-49	13	9

2. How many days in the past 5 years have you fished the St. Joe River? (Please check one)

Days	1-5		6-10		11-15		16-20		21-25		>25	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
						Section 1						
Bait	0	0	0	0	0	0	0	0	0	0	1	14
Fly	0	0	0	0	0	0	0	0	0	0	3	43
Lure	1	14	0	0	0	0	1	14	0	0	1	14
						Section 2						
Bait	0	0	2	18	0	0	0	0	0	0	0	0
Fly	0	0	0	0	2	18	0	0	0	0	3	27
Lure	1	9	0	0	1	9	1	9	0	0	1	9
						Section 3						
Bait	3	5	2	4	2	4	0	0	3	5	8	14
Fly	12	21	4	7	0	0	1	2	4	7	9	16
Lure	0	0	4	7	1	2	0	0	0	0	3	5
						Section 4 (catch and release)						
Bait	0	0	0	0	0	0	0	0	0	0	0	0

Appendix E. Continued.

3. How many days have you fished the St. Joe River in the last 12 months? _____days

	Number of anglers	Range	Mean	Median
Bait	27	1-59	11	7
Fly	171	0-60	8	5
Lure	26	1-29	7	3

4. Do you fish on the St. Joe River (less often___, same___, more often___) now as you did in previous years?

	Did not answer		Less		Same		More	
	No.	%	No.	%	No.	%	No.	%
				Section 1				
Bait	0	0	0	0	0	0	1	14
Fly	0	0	1	14	2	29	0	0
Lure	0	0	0	0	1	14	2	29
				Section 2				
Bait	0	0	1	10	0	0	1	10
Fly	0	0	1	10	2	20	2	20
Lure	0	0	1	10	2	20	0	0
				Section 3				
Bait	0	0	0	0	9	16	10	18
Fly	0	0	8	14	11	19	11	19
Lure	0	0	1	2	5	9	2	4
				Section 4 (catch-and-release)				
Bait	0	0	0	0	0	0	0	0
Fly	2	2	21	16	55	43	43	33
Lure	0	0	1	1	4	3	3	2
				Total				
Bait	0	0	0	0	9	4	12	6
Fly	2	1	31	15	70	35	56	28
Lure	0	0	3	1	12	6	7	3

5. What type (s) of tackle do you fish with **most often** on the St. Joe River? (Please check one)
_22_ bait _24_ lures _168_ flies

Appendix E. Continued.

6. Which section of the St. Joe River do you most **prefer** to fish? (Please check one)

	Prospector Cr. downstream		Prospector Cr. to Spruce Tree Camp		Spruce Tree Camp upstream		Marble Cr.		North Fork St. Joe River		Other		No preference	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
							Section 1							
Bait	0	0	0	0	0	0	1	14	0	0	0	0	0	0
Fly	2	29	0	0	0	0	0	0	0	0	0	0	1	14
Lure	1	14	1	14	0	0	0	0	0	0	0	0	1	14
							Section 2							
Bait	2	22	0	0	0	0	0	0	0	0	0	0	0	0
Fly	2	22	0	0	1	11	0	0	0	0	0	0	0	0
Lure	0	0	2	22	0	0	1	11	0	0	0	0	1	11
							Section 3							
Bait	12	21	1	2	0	0	0	0	2	4	1	2	3	5
Fly	8	14	11	20	2	4	1	2	0	0	0	0	7	13
Lure	4	7	1	2	0	0	0	0	1	2	0	0	2	4
							Section 4 (catch-and-release)							
Bait	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fly	4	3	69	56	27	22	2	2	1	1	1	1	11	9
Lure	0	0	6	5	0	0	0	0	0	0	0	0	3	2
							Total							
Bait	14	8	1	1	0	0	1	1	2	1	1	1	3	2
Fly	16	9	80	43	30	16	3	2	1	1	1	1	19	10
Lure	5	3	10	5	0	0	1	1	1	1	0	0	7	4

7. Some anglers may **prefer** to fish one area but **actually fish** in another. In the last five years, which section of t St. Joe River did you **most often** fish? (Please check one).

	Prospector Cr. downstream		Prospector Cr. to Spruce Tree Camp		Spruce Tree Camp upstream		Marble Cr.		North Fork St. Joe River		Other		All equally	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
							Section 1							
Bait	0	0	0	0	0	0	1	14	0	0	0	0	0	0
Fly	2	29	0	0	0	0	1	14	0	0	0	0	0	0
Lure	1	14	1	14	0	0	0	0	0	0	0	0	1	14
							Section 2							
Bait	2	18	0	0	0	0	0	0	0	0	0	0	0	0
Fly	3	27	0	0	1	9	1	9	0	0	0	0	0	0
Lure	2	18	1	9	0	0	0	0	1	9	0	0	0	0

Appendix E. Continued.

	Prospector Cr. downstream		Prospector Cr. to Spruce Tree Camp		Spruce Tree Camp upstream		Marble Cr.		North Fork St. Joe River		Other		All equally	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
							Section 3							
Bait	15	26	0	0	0	0	0	0	2	4	1	2	1	2
Fly	11	19	12	21	2	4	0	0	1	2	1	2	3	5
Lure	3	5	4	7	0	0	0	0	1	2	0	0	0	0
							Section 4 (catch-and-release)							
Bait	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fly	7	6	81	66	15	12	1	1	3	2	0	0	7	6
Lure	1	1	5	4	0	0	0	0	0	0	0	0	2	2
							Total							
Bait	17	6	0	0	0	0	1	<1	2	1	1	<1	1	<1
Fly	97	37	93	35	16	6	3	1	4	2	1	<1	7	3
Lure	6	2	11	4	0	0	0	0	2	1	0	0	3	1

8. I feel that fishing regulations for the St. Joe River are difficult to understand.

	Strongly disagree		Disagree		Neutral		Agree		Strongly Agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 1					
Bait	0	0	1	14	0	0	0	0	0	0
Fly	1	14	0	0	0	0	2	29	0	0
Lure	1	14	2	29	0	0	0	0	0	0
					Section 2					
Bait	1	9	1	9	0	0	0	0	0	0
Fly	1	9	3	27	0	0	0	0	1	9
Lure	2	18	0	0	0	0	2	18	0	0
					Section 3					
Bait	5	9	10	18	1	2	2	4	1	2
Fly	8	14	18	32	1	2	2	4	1	2
Lure	2	4	3	5	1	2	2	4	0	0
					Section 4 (catch-and-release)					
Bait	0	0	0	0	0	0	0	0	0	0
Fly	50	37	64	47	6	4	7	5	2	1
Lure	2	1	6	4	0	0	0	0	0	0
					Total					
Bait	6	3	12	6	1	<1	2	1	1	<1
Fly	60	28	85	40	7	3	11	5	4	2
Lure	7	3	11	5	1	<1	4	2	0	0

Appendix E. Continued.

9. The current fishing regulations on the St. Joe River are easy to follow.

	Strongly disagree		Disagree		Neutral		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 1					
Bait	0	0	0	0	0	0	1	14	0	0
Fly	0	0	1	14	0	0	1	14	0	14
Lure	0	0	0	0	0	0	2	29	1	14
					Section 2					
Bait	0	0	0	0	0	0	1	9	1	9
Fly	0	0	2	18	0	0	2	18	1	9
Lure	0	0	2	18	0	0	0	0	2	18
					Section 3					
Bait	1	2	2	4	1	2	11	20	3	5
Fly	1	2	1	2	2	4	19	34	7	13
Lure	1	2	2	4	0	0	5	9	0	0
					Section 4 (catch-and-release)					
Bait	0	0	0	0	0	0	0	0	0	0
Fly	7	5	5	4	4	3	72	53	40	29
Lure	0	0	0	0	2	1	6	4	1	1
					Total					
Bait	1	<1	2	1	1	<1	13	6	4	2
Fly	8	4	9	4	6	3	94	45	49	23
Lure	1	<1	4	2	2	1	13	6	4	2

10. Are you familiar with the Fish and Game special brochure on fishing in the Spokane River drainage?

	No		Yes	
	No.	%	No.	%
	Section 1			
Bait	1	14	0	0
Fly	3	43	0	0
Lure	3	43	0	0
	Section 2			
Bait	2	18	0	0
Fly	4	36	1	9
Lure	4	36	0	0
	Section 3			
Bait	19	34	0	0
Fly	25	45	4	7
Lure	7	13	1	2

Appendix E. Continued.

	No		Yes	
	No.	%	No.	%
	Section 4 (catch-and-release)			
Bait	0	0	0	0
Fly	103	74	27	19
Lure	7	5	2	1
	Total			
Bait	22	10	0	0
Fly	135	63	32	15
Lure	21	10	3	1

If yes, Please rate the usefulness of this brochure to you in understanding the fishing regulations on the St. Joe River?
Poor ___Fair ___Good ___Excellent

	Excellent		Good		Fair		Poor	
	No.	%	No.	%	No.	%	No.	%
			Section 1					
Bait	0	0	0	0	0	0	0	0
Fly	0	0	0	0	0	0	0	0
Lure	0	0	0	0	0	0	0	0
			Section 2					
Bait	0	0	0	0	0	0	0	0
Fly	0	0	1	100	0	0	0	0
Lure	0	0	0	0	0	0	0	0
			Section 3					
Bait	0	0	1	17	0	0	0	0
Fly	0	0	4	67	0	0	0	0
Lure	0	0	0	0	1	17	0	0
			Section 4 (catch-and-release)					
Bait	0	0	0	0	0	0	0	0
Fly	3	10	20	69	4	14	0	0
Lure	1	3	1	3	0	0	0	0
			Total					
Bait	0	0	1	3	0	0	0	0
Fly	3	8	25	69	4	11	0	0
Lure	1	3	1	3	1	3	0	0

Appendix E. Continued.

11. I feel it is important to allow catch-and-release fishing on a portion of the St. Joe River.

	Strongly disagree		Disagree		Neutral		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 1					
Bait	0	0	0	0	0	0	0	0	1	14
Fly	1	14	0	0	0	0	1	14	1	14
Lure	0	0	0	0	1	14	2	29	0	0
					Section 2					
Bait	0	0	0	0	1	9	1	9	0	0
Fly	0	0	0	0	1	9	0	0	4	36
Lure	0	0	0	0	0	0	2	18	2	18
					Section 3					
Bait	2	4	0	0	1	2	7	12	9	16
Fly	0	0	0	0	0	0	6	11	24	42
Lure	0	0	0	0	1	2	3	5	4	7
					Section 4 (catch-and-release)					
Bait	0	0	0	0	0	0	0	0	0	0
Fly	1	1	1	1	1	1	16	12	110	80
Lure	0	0	1	1	1	1	4	3	3	2
					Total					
Bait	2	1	0	0	2	1	8	4	10	5
Fly	2	1	1	<1	2	1	23	11	139	65
Lure	0	0	1	<1	3	1	11	5	9	4

12. I would support expanding the catch-and-release section of the St. Joe River knowing that the harvest section would be smaller.

	Strongly disagree		Disagree		Neutral		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 1					
Bait	1	14	0	0	0	0	0	0	0	0
Fly	1	14	1	14	0	0	0	0	0	0
Lure	1	14	0	0	1	14	1	14	0	0
					Section 2					
Bait	1	9	0	0	0	0	1	9	0	0
Fly	1	9	1	9	0	0	0	0	3	27
Lure	0	0	1	9	1	9	0	0	3	18

Appendix E. Continued.

	Strongly disagree		Disagree		Neutral		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 3					
Bait	7	12	7	12	2	4	1	2	2	4
Fly	0	0	4	7	5	9	3	5	18	32
Lure	3	5	1	2	1	2	1	2	2	4
					Section 4 (catch-and-release)					
Bait	0	0	0	0	0	0	0	0	0	0
Fly	5	4	6	4	7	5	24	12	88	63
Lure	1	1	2	1	4	3	1	1	1	1
					Total					
Bait	9	4	7	3	2	1	2	1	2	1
Fly	7	3	10	5	12	6	28	13	109	52
Lure	5	2	4	2	7	3	3	1	6	3

13. I think it is important to allow harvest fishing on a portion of the St. Joe River.

	Strongly disagree		Disagree		Neutral		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 1					
Bait	0	0	0	0	0	0	0	0	1	14
Fly	0	0	0	0	0	0	3	43	0	0
Lure	0	0	0	0	0	0	1	14	2	29
					Section 2					
Bait	0	0	0	0	0	0	1	9	1	9
Fly	2	18	1	9	0	0	1	9	1	9
Lure	0	0	1	9	0	0	3	27	0	0
					Section 3					
Bait	0	0	0	0	0	0	8	14	11	20
Fly	4	7	2	4	2	5	15	27	5	9
Lure	0	0	1	2	1	2	4	7	2	4
					Section 4 (catch-and-release)					
Bait	0	0	0	0	0	0	0	0	0	0
Fly	26	19	21	15	23	17	49	35	11	8
Lure	0	0	0	0	2	1	6	4	1	1
					Total					
Bait	0	0	0	0	0	0	9	4	12	6
Fly	32	15	24	11	26	12	68	32	17	8
Lure	0	0	2	1	3	1	14	7	5	2

Appendix E. Continued.

14. I would support expanding the harvest section of the St. Joe River knowing that the catch-and-release section would have to become smaller.

	Strongly disagree		Disagree		Neutral		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 1					
Bait	0	0	1	14	0	0	0	0	0	0
Fly	2	29	0	0	0	0	1	14	0	0
Lure	0	0	2	29	1	14	0	0	0	0
					Section 2					
Bait	0	0	1	9	0	0	1	9	0	0
Fly	2	18	1	9	0	0	0	0	2	18
Lure	2	18	2	18	0	0	0	0	0	0
					Section 3					
Bait	5	9	6	11	3	5	1	2	4	7
Fly	18	32	9	16	1	2	2	4	0	0
Lure	3	5	3	5	1	2	1	2	0	0
					Section 4 (catch-and-release)					
Bait	0	0	0	0	0	0	0	0	0	0
Fly	97	70	23	17	3	2	3	2	4	3
Lure	3	2	2	1	3	2	1	1	0	0
					Total					
Bait	5	2	8	4	3	1	2	1	4	2
Fly	119	56	33	15	4	2	6	3	6	3
Lure	8	4	9	4	5	2	2	1	0	0

15. I would prefer regulations which would result in me catching more fish, even if it meant I could keep fev fish to take home.

	Strongly disagree		Disagree		Neutral		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 1					
Bait	0	0	0	0	1	17	0	0	0	0
Fly	0	0	0	0	1	17	1	17	0	0
Lure	0	0	1	17	1	17	1	17	0	0
					Section 2					
Bait	0	0	1	9	0	0	1	9	0	0
Fly	0	0	0	0	0	0	2	18	3	27
Lure	0	0	1	9	0	0	2	18	1	9

Appendix E. Continued.

	Strongly disagree		Disagree		Neutral		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 3					
Bait	1	2	9	16	2	4	3	5	4	7
Fly	0	0	2	4	1	2	7	12	20	35
Lure	2	4	2	4	1	2	2	4	1	2
					Section 4 (catch-and-release)					
Bait	0	0	0	0	0	0	0	0	0	0
Fly	8	6	5	4	9	7	28	20	79	57
Lure	0	0	3	2	1	1	4	3	1	1
					Total					
Bait	1	<1	10	5	3	1	4	1	4	1
Fly	8	4	7	3	11	5	38	18	102	48
Lure	2	1	7	3	3	1	9	4	3	1

16. I would prefer regulations which allow me to keep more fish now knowing it would result in fewer fish t catch on future trips.

	Strongly disagree		Disagree		Neutral		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 1					
Bait	0	0	1	14	0	0	0	0	0	0
Fly	2	29	0	0	1	14	0	0	0	0
Lure	1	14	2	29	0	0	0	0	0	0
					Section 2					
Bait	0	0	2	18	0	0	0	0	0	0
Fly	3	27	1	9	1	9	0	0	0	0
Lure	2	18	1	9	1	9	0	0	0	0
					Section 3					
Bait	7	12	10	18	1	2	1	2	0	0
Fly	24	42	5	9	0	0	0	0	1	2
Lure	3	5	3	5	0	0	1	2	1	2
					Section 4 (catch-and-release)					
Bait	0	0	0	0	0	0	0	0	0	0
Fly	105	76	19	14	2	1	1	1	2	1
Lure	3	2	2	1	2	1	2	1	0	0
					Total					
Bait	7	3	13	6	1	<1	1	<1	0	0
Fly	134	62	25	12	4	2	1	<1	3	1
Lure	9	4	8	4	3	1	3	1	1	<1

Appendix E. Continued.

SECTION 2. These questions pertain to your feelings in general about trout fishing. Please circle the num that best describes your feelings.

1. I enjoy eating the trout I catch.

	Strongly disagree		Disagree		Neutral		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 1					
Bait	0	0	0	0	0	0	1	14	0	0
Fly	0	0	1	14	0	0	1	14	1	14
Lure	0	0	0	0	0	0	1	14	2	29
					Section 2					
Bait	0	0	1	9	0	0	1	9	0	0
Fly	1	9	1	9	0	0	2	18	1	9
Lure	0	0	1	9	0	0	3	27	0	0
					Section 3					
Bait	1	2	1	2	1	2	9	16	7	13
Fly	4	7	5	9	4	7	13	24	3	5
Lure	1	2	0	0	0	0	3	5	3	5
					Section 4 (catch-and-release)					
Bait	0	0	0	0	0	0	0	0	0	0
Fly	31	23	44	32	8	6	38	28	6	4
Lure	1	1	1	1	0	0	5	7	2	1
					Total					
Bait	1	<1	2	1	1	<1	11	5	7	3
Fly	36	17	51	25	12	6	54	26	11	5
Lure	2	1	1	<1	0	0	12	6	7	3

2. I would rather catch one trophy trout than my limit of average size trout.

	Strongly disagree		Disagree		Neutral		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 1					
Bait	0	0	1	14	0	0	0	0	0	0
Fly	0	0	1	14	0	0	2	29	0	0
Lure	0	0	1	14	0	0	2	29	0	0
					Section 2					
Bait	0	0	2	18	0	0	0	0	0	0
Fly	0	0	1	9	0	0	1	9	3	27
Lure	0	0	1	9	0	0	2	18	1	9

Appendix E. Continued.

	Strongly disagree		Disagree		Neutral		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 3					
Bait	0	0	10	18	3	5	4	7	2	4
Fly	3	5	3	5	5	9	13	23	6	11
Lure	2	4	1	2	1	2	3	5	1	2
					Section 4 (catch and release)					
Bait	0	0	0	0	0	0	0	0	0	0
Fly	10	7	20	15	20	15	42	31	35	26
Lure	0	0	2	1	3	2	4	3	0	0
					Total					
Bait	0	0	13	6	3	1	4	2	2	1
Fly	13	6	25	12	25	12	58	28	44	21
Lure	2	1	5	2	4	2	11	5	0	0

3. I often share my trout catch with others.

	Strongly disagree		Disagree		Neutral		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 1					
Bait	0	0	1	14	0	0	0	0	0	0
Fly	2	29	0	0	0	0	1	14	0	0
Lure	1	14	0	0	2	29	0	0	0	0
					Section 2					
Bait	0	0	2	18	0	0	0	0	0	0
Fly	2	18	1	9	0	0	2	18	0	0
Lure	0	0	2	18	0	0	2	18	0	0
					Section 3					
Bait	3	5	9	16	2	4	5	9	0	0
Fly	12	21	7	12	2	4	5	9	4	7
Lure	3	5	1	2	1	2	2	4	1	2
					Section 4 (catch-and-release)					
Bait	0	0	0	0	0	0	0	0	0	0
Fly	66	49	35	26	12	9	10	7	3	2
Lure	1	1	5	4	0	0	2	1	0	0
					Total					
Bait	3	1	12	6	2	1	5	2	0	0
Fly	80	39	43	21	14	7	18	9	7	3
Lure	5	2	8	4	3	1	6	3	1	<1

Appendix E. Continued.

4. I consider my fishing trip to be worthwhile, only if I catch trout.

	Strongly disagree		Disagree		Neutral		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 1					
Bait	0	0	1	14	0	0	0	0	0	0
Fly	0	0	1	14	0	0	1	14	1	14
Lure	1	14	1	14	1	14	0	0	0	0
					Section 2					
Bait	0	0	0	0	0	0	2	18	0	0
Fly	2	18	1	9	1	9	1	9	0	0
Lure	0	0	2	18	0	0	2	18	0	0
					Section 3					
Bait	3	5	6	11	1	2	5	9	3	5
Fly	14	25	8	14	2	4	3	5	3	5
Lure	3	5	5	9	0	0	0	0	0	0
					Section 4 (catch-and-release)					
Bait	0	0	0	0	0	0	0	0	0	0
Fly	25	18	33	24	14	10	33	24	23	17
Lure	1	1	4	3	1	1	3	2	0	0
					Total					
Bait	3	1	7	3	1	<1	7	3	3	1
Fly	41	19	43	20	17	8	38	18	27	13
Lure	5	2	12	6	2	1	5	2	0	0

5. I release most of the trout I catch.

	Strongly disagree		Disagree		Neutral		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 1					
Bait	0	0	1	14	0	0	0	0	0	0
Fly	0	0	0	0	0	0	2	29	1	14
Lure	0	0	1	14	0	0	2	29	0	0
					Section 2					
Bait	0	0	0	0	0	0	2	18	0	0
Fly	0	0	1	9	0	0	0	0	4	36
Lure	0	0	0	0	0	0	2	18	2	18
					Section 3					
Bait	1	2	3	5	1	2	10	18	4	7
Fly	0	0	0	0	0	0	11	20	18	32
Lure	0	0	0	0	1	2	4	7	3	5

Appendix E. Continued.

	Strongly disagree		Disagree		Neutral		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 4 (catch-and-release)					
Bait	0	0	0	0	0	0	0	0	0	0
Fly	9	7	3	2	1	1	23	17	87	66
Lure	0	0	1	1	0	0	5	4	3	2
					Total					
Bait	1	<1	4	2	1	<1	12	6	4	2
Fly	9	4	4	2	1	<1	36	17	110	53
Lure	0	0	2	1	1	<1	13	6	8	4

6. I release all the trout I catch.

	Strongly disagree		Disagree		Neutral		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 1					
Bait	0	0	1	14	0	0	0	0	0	0
Fly	0	0	2	29	0	0	0	0	1	14
Lure	0	0	3	43	0	0	0	0	0	0
					Section 2					
Bait	0	0	1	9	0	0	1	9	0	0
Fly	0	0	2	18	0	0	1	9	2	18
Lure	0	0	2	18	0	0	1	9	1	9
					Section 3					
Bait	3	5	12	21	0	0	3	5	1	2
Fly	3	5	6	11	3	5	4	7	14	25
Lure	2	4	2	4	1	2	1	2	1	2
					Section 4 (catch-and-release)					
Bait	0	0	0	0	0	0	0	0	0	0
Fly	1	1	14	10	3	2	23	17	88	64
Lure	0	0	7	5	0	0	1	1	0	0
					Total					
Bait	3	1	14	7	0	0	4	2	1	<1
Fly	4	2	24	11	6	3	28	13	105	50
Lure	2	1	14	7	1	<1	3	1	2	1

Appendix E. Continued.

7. Catching a limit of trout is important to me.

	Strongly disagree		Disagree		Neutral		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 1					
Bait	0	0	0	0	0	0	0	0	1	14
Fly	2	29	1	14	0	0	0	0	0	0
Lure	0	0	2	29	0	0	1	14	0	0
					Section 2					
Bait	0	0	1	9	1	9	0	0	0	0
Fly	4	36	1	9	0	0	0	0	0	0
Lure	0	0	2	29	2	29	0	0	0	0
					Section 3					
Bait	4	7	7	12	1	2	5	9	2	4
Fly	10	18	14	25	1	2	4	7	1	2
Lure	3	5	1	2	1	2	3	5	0	0
					Section 4 (catch-and-release)					
Bait	0	0	0	0	0	0	0	0	0	0
Fly	64	47	45	33	10	7	5	4	2	1
Lure	4	3	3	2	2	1	0	0	0	0
					Total					
Bait	4	2	8	4	2	1	6	3	2	1
Fly	80	38	61	29	11	5	9	4	3	1
Lure	7	3	8	4	5	2	4	2	0	0

8. I enjoy catching more trout than my friends.

	Strongly disagree		Disagree		Neutral		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 1					
Bait	0	0	1	14	0	0	0	0	0	0
Fly	1	14	0	0	0	0	2	29	0	0
Lure	1	14	1	14	1	14	0	0	0	0
					Section 2					
Bait	0	0	0	0	1	10	1	10	0	0
Fly	1	10	3	30	0	0	1	10	0	0
Lure	0	0	0	0	1	10	2	20	0	0
					Section 3					
Bait	3	5	6	11	2	4	7	13	1	2
Fly	5	9	6	11	4	7	8	14	7	13
Lure	1	2	1	2	1	2	1	2	3	5

Appendix E. Continued.

	Strongly disagree		Disagree		Neutral		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 4 (catch-and-release)					
Bait	0	0	0	0	0	0	0	0	0	0
Fly	23	17	25	18	25	18	34	25	20	15
Lure	1	1	3	2	2	1	3	2	0	0
					Total					
Bait	3	1	6	3	3	1	8	4	1	<1
Fly	30	14	34	16	29	14	45	22	27	13
Lure	3	1	5	2	5	2	6	3	3	1

9. I often keep all the trout I catch up to the legal limit.

	Strongly disagree		Disagree		Neutral		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 1					
Bait	0	0	0	0	0	0	1	14	0	0
Fly	1	14	1	14	0	0	1	14	0	0
Lure	0	0	1	14	0	0	2	29	0	0
					Section 2					
Bait	2	18	0	0	0	0	0	0	0	0
Fly	4	36	1	9	0	0	0	0	0	0
Lure	1	9	1	9	0	0	2	18	0	0
					Section 3					
Bait	2	4	9	16	1	2	5	9	2	4
Fly	19	33	10	18	0	0	1	2	0	0
Lure	3	5	3	5	1	2	1	2	0	0
					Section 4 (catch-and-release)					
Bait	0	0	0	0	0	0	0	0	0	0
Fly	98	71	24	17	1	1	6	4	1	1
Lure	3	2	4	3	1	1	1	1	0	0
					Total					
Bait	4	2	9	4	1	<1	6	3	2	1
Fly	122	57	36	17	1	<1	8	4	1	<1
Lure	7	3	9	4	2	1	6	3	0	0

Appendix E. Continued.

10. I feel stocked trout are as enjoyable to catch as wild trout.

	Strongly disagree		Disagree		Neutral		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 1					
Bait	0	0	0	0	0	0	1	14	0	0
Fly	2	29	0	0	0	0	0	0	1	14
Lure	0	0	2	29	0	0	1	14	0	0
					Section 2					
Bait	0	0	0	0	0	0	2	18	0	0
Fly	2	18	1	9	0	0	1	9	1	9
Lure	0	0	2	18	1	9	1	9	0	0
					Section 3					
Bait	1	2	5	9	2	4	8	14	3	5
Fly	7	12	5	9	8	14	9	11	4	7
Lure	4	7	0	0	0	0	1	2	3	5
					Section 4 (catch-and-release)					
Bait	0	0	0	0	0	0	0	0	0	0
Fly	46	33	36	26	22	16	18	13	8	6
Lure	1	1	2	1	2	1	3	2	1	1
					Total					
Bait	1	<1	5	2	2	1	9	4	3	1
Fly	57	27	42	20	30	14	25	12	4	2
Lure	5	2	6	3	3	1	6	3	4	2

11. Fishing in stocked waters gives me a greater chance of catching trout.

	Strongly disagree		Disagree		Neutral		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 1					
Bait	0	0	0	0	0	0	1	14	0	0
Fly	0	0	2	29	0	0	0	0	0	0
Lure	0	0	0	0	1	14	2	29	0	0
					Section 2					
Bait	0	0	0	0	2	18	0	0	0	0
Fly	0	0	3	27	0	0	1	9	1	9
Lure	0	0	1	9	0	0	3	27	0	0
					Section 3					
Bait	1	2	0	0	1	2	12	21	5	9
Fly	4	7	1	2	8	14	11	19	6	11
Lure	1	2	0	0	1	2	4	7	2	4

Appendix E. Continued.

	Strongly disagree		Disagree		Neutral		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 4 (catch-and-release)					
Bait	0	0	0	0	0	0	0	0	0	0
Fly	21	15	23	17	38	27	39	28	9	6
Lure	0	0	0	0	2	1	7	5	0	0
					Total					
Bait	1	<1	0	0	3	1	13	6	5	2
Fly	25	12	29	14	46	22	51	24	15	7
Lure	1	<1	1	<1	4	2	16	8	2	9

12. I try to fish streams shortly after they are stocked with trout.

	Strongly disagree		Disagree		Neutral		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 1					
Bait	0	0	0	0	1	14	0	0	0	0
Fly	2	29	1	14	0	0	0	0	0	0
Lure	0	0	3	43	0	0	0	0	0	0
					Section 2					
Bait	0	0	2	18	0	0	0	0	0	0
Fly	3	27	2	18	0	0	0	0	0	0
Lure	0	0	1	9	0	0	3	27	0	0
					Section 3					
Bait	2	4	10	18	3	5	3	5	1	2
Fly	9	16	12	21	7	13	1	2	0	0
Lure	2	4	3	5	3	5	0	0	0	0
					Section 4 (catch-and-release)					
Bait	0	0	0	0	0	0	0	0	0	0
Fly	66	47	41	30	21	15	2	1	0	0
Lure	0	0	8	6	0	0	1	1	0	0
					Total					
Bait	2	1	12	6	4	2	3	1	1	<1
Fly	80	38	56	27	28	13	3	1	0	0
Lure	2	1	15	7	3	1	1	<1	0	0

Appendix E. Continued.

13. Stocking is important to maintain good trout fishing.

	Strongly disagree		Disagree		Neutral		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 1					
Bait	0	0	0	0	0	0	0	0	1	14
Fly	1	14	0	0	0	0	2	29	0	0
Lure	0	0	0	0	2	29	0	0	1	14
					Section 2					
Bait	0	0	0	0	1	9	1	9	0	0
Fly	3	27	1	9	0	0	1	9	0	0
Lure	0	0	0	0	0	0	4	36	0	0
					Section 3					
Bait	0	0	0	0	2	4	11	19	6	11
Fly	2	4	3	5	11	19	12	21	2	4
Lure	0	0	1	2	1	2	4	7	2	4
					Section 4 (catch-and-release)					
Bait	0	0	0	0	0	0	0	0	0	0
Fly	43	31	17	12	40	29	20	14	9	7
Lure	0	0	0	0	3	2	5	4	1	1
					Total					
Bait	0	0	0	0	3	1	12	6	7	3
Fly	49	23	21	10	51	24	35	17	11	5
Lure	0	0	0	0	6	2	13	6	4	2

14. How would you compare the number of trout you catch to that of other anglers? (Please check one)

	Much less		Less		Same		More		Much more	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 1					
Bait	0	0	0	0	0	0	1	14	0	0
Fly	0	0	1	14	0	0	1	14	1	14
Lure	0	0	0	0	3	43	0	0	0	0
					Section 2					
Bait	0	0	1	9	1	9	0	0	0	0
Fly	0	0	1	9	1	9	3	27	0	0
Lure	0	0	1	9	2	18	1	9	0	0
					Section 3					
Bait	3	5	2	4	9	16	3	5	2	4
Fly	1	2	3	5	9	16	11	19	6	11
Lure	1	2	2	4	3	5	2	4	0	0

Appendix E. Continued.

	Much less		Less		Same		More		Much more	
	No.	%	No.	%	No.	%	No.	%	No.	%
Section 4 (catch-and-release)										
Bait	0	0	0	0	0	0	0	0	0	0
Fly	0	0	14	10	42	31	57	42	15	11
Lure	0	0	0	0	5	4	3	2	1	1
Total										
Bait	3	1	3	1	10	5	4	2	0	0
Fly	1	<1	19	9	52	25	72	34	22	10
Lure	1	<1	3	1	13	6	6	3	1	<1

15. Do you belong to a local sportsman club (ie. rod and gun club or fishing club)? Yes or No.

	Yes		No	
	No.	%	No.	%
Section 1				
Bait	0	0	1	14
Fly	0	0	3	43
Lure	0	0	3	43
Section 2				
Bait	0	0	2	18
Fly	1	9	4	36
Lure	0	0	4	36
Section 3				
Bait	1	2	17	30
Fly	1	2	29	52
Lure	0	0	8	14
Section 4				
Bait	0	0	0	0
Fly	19	14	110	80
Lure	0	0	9	14
Total				
Bait	1	<1	20	9
Fly	21	10	146	69
Lure	0	0	24	11

Appendix E. Continued.

16. Do you belong to a National sportsman group? Yes or No.

	Yes		No	
	No.	%	No.	%
	Section 1			
Bait	0	0	1	14
Fly	0	0	3	43
Lure	0	0	3	43
	Section 2			
Bait	0	0	2	18
Fly	1	9	4	36
Lure	0	0	4	36
	Section 3			
Bait	1	2	18	32
Fly	4	7	26	46
Lure	0	0	8	14
	Section 4			
Bait	0	0	0	0
Fly	30	22	100	72
Lure	2	1	7	5
	Total			
Bait	1	<1	21	10
Fly	35	16	133	62
Lure	2	1	22	10

Appendix E. Continued.

SECTION 3. These questions pertain to the section of the St. Joe River ***downstream of Prospector Creek.*** Please answ the following questions ***even if you do not fish*** the section from Prospector Creek downstream.

1. Do you fish the section of the St. Joe River from old railroad bridge at Fall Creek upstream to Prospector Creek?

	Yes		No		Do not know	
	No.	%	No.	%	No.	%
			Section 1			
Bait	1	14	0	0	0	0
Fly	3	43	0	0	0	0
Lure	3	43	0	0	0	0
			Section 2			
Bait	2	18	0	0	0	0
Fly	4	36	1	9	0	0
Lure	3	27	0	0	1	9
			Section 3			
Bait	15	26	3	5	1	2
Fly	19	33	6	11	5	9
Lure	7	12	0	0	1	2
			Section 4 (catch-and-release)			
Bait	0	0	0	0	0	0
Fly	50	37	62	45	17	12
Lure	6	4	2	1	0	0
			Total			
Bait	18	9	3	1	1	<1
Fly	76	36	69	33	22	10
Lure	19	9	2	1	2	1

2. In general, I feel fishing regulations for **this section** of the St. Joe River allow me to keep enough fish. (Please select the one that best describes your feelings)

	Strongly disagree		Disagree		Neutral		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 1					
Bait	0	0	0	0	1	1	0	0	0	0
Fly	0	0	1	14	0	0	1	14	1	14
Lure	0	0	2	29	0	0	1	14	0	0
					Section 2					
Bait	0	0	0	0	0	0	2	18	0	0
Fly	0	0	1	9	1	9	1	9	2	18
Lure	0	0	2	18	0	0	1	9	1	9

Appendix E. Continued.

	Strongly disagree		Disagree		Neutral		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 3					
Bait	0	0	3	5	4	7	6	11	6	11
Fly	2	4	0	0	6	11	14	25	8	14
Lure	0	0	0	0	3	5	4	7	1	2
					Section 4 (catch-and-release)					
Bait	0	0	0	0	0	0	0	0	0	0
Fly	4	3	5	4	54	42	24	19	33	26
Lure	1	1	2	2	3	2	1	1	1	1
					Total					
Bait	0	0	3	1	5	2	8	4	6	3
Fly	6	3	7	3	61	30	40	20	44	22
Lure	1	<1	6	3	6	3	7	3	3	1

3. If opportunity to keep fish was eliminated on this section of the St. Joe River **from old railroad bridge at F Creek upstream to Prospector Creek**, how would this change affect your fishing activity in this section? (select the one that best describes your feelings)

	Begin fishing		Increase fishing		No change		Decrease fishing		Stop fishing	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 1					
Bait	0	0	0	0	1	14	0	0	0	0
Fly	0	0	0	0	2	29	0	0	1	14
Lure	0	0	0	0	1	14	2	29	0	0
					Section 2					
Bait	0	0	0	0	1	9	0	0	1	9
Fly	1	9	1	9	1	9	0	0	2	18
Lure	0	0	2	18	1	9	1	9	0	0
					Section 3					
Bait	0	0	1	2	3	5	10	18	4	7
Fly	3	5	9	16	16	29	2	4	0	0
Lure	0	0	3	5	1	2	3	5	1	2
					Section 4 (catch-and-release)					
Bait	0	0	0	0	0	0	0	0	0	0
Fly	40	30	40	30	40	30	3	2	2	2
Lure	0	0	1	1	0	0	4	3	0	0
					Total					
Bait	0	0	1	<1	5	2	10	5	5	2
Fly	44	21	50	24	59	28	5	2	5	2
Lure	0	0	6	3	5	2	7	3	6	3

Appendix E. Continued.

4. If it were unlawful to use bait **in this section** of the St. Joe River, my fishing effort **on this section** would (Plea select the one that best describes your feelings)

	Stop fishing		Decrease fishing considerably		Decrease fishing some		No change		Increase fishing some		Increase fishing considerably	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 1							
Bait	0	0	0	0	0	0	1	14	0	0	0	0
Fly	1	14	0	0	0	0	2	29	0	0	0	0
Lure	0	0	1	14	1	14	1	14	0	0	0	0
					Section 2							
Bait	2	18	0	0	0	0	0	0	0	0	0	0
Fly	0	0	1	9	0	0	1	9	0	0	3	27
Lure	0	0	0	0	0	0	2	18	1	9	1	9
					Section 3							
Bait	6	11	8	14	2	4	0	0	1	2	1	2
Fly	1	2	0	0	4	7	14	25	6	11	5	9
Lure	1	2	1	2	1	2	3	5	0	0	2	4
					Section 4 (catch-and-release)							
Bait	0	0	0	0	0	0	0	0	0	0	0	0
Fly	0	0	2	2	2	2	46	35	37	28	38	29
Lure	0	0	0	0	1	1	6	5	0	0	0	0
					Total							
Bait	8	4	8	4	2	1	1	<1	1	<1	1	<1
Fly	2	1	3	1	6	3	63	31	43	21	46	22
Lure	1	<1	2	1	3	1	12	6	1	<1	3	1

5. If the number of hatchery trout stocked **in this section** was **decreased,** my fishing effort **on the this section** of the river would (Please select the one that best describes your feelings)

	Stop fishing		Decrease fishing considerably		Decrease fishing some		No change		Increase fishing some		Increase fishing considerably	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 1							
Bait	0	0	0	0	1	14	0	0	0	0	0	0
Fly	0	0	0	0	1	14	2	29	0	0	0	0
Lure	0	0	0	0	0	0	3	43	0	0	0	0
					Section 2							
Bait	0	0	0	0	0	0	2	18	0	0	0	0
Fly	0	0	0	0	0	0	3	27	0	0	2	18
Lure	0	0	1	9	1	9	2	18	0	0	0	0

Appendix E. Continued.

	Stop fishing		Decrease fishing considerably		Decrease fishing some		No change		Increase fishing some		Increase fishing considerably	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Section 3												
Bait	1	2	1	2	5	9	10	18	1	2	1	2
Fly	0	0	0	0	2	4	24	42	3	5	1	2
Lure	0	0	0	0	1	2	6	11	0	0	1	2
Section 4 (catch-and-release)												
Bait	0	0	0	0	0	0	0	0	0	0	0	0
Fly	2	1	2	1	12	9	71	53	24	18	15	11
Lure	0	0	0	0	2	1	6	4	0	0	0	0
Total												
Bait	1	<1	1	<1	6	3	12	6	1	<1	1	<1
Fly	2	1	2	1	15	7	100	48	27	13	18	9
Lure	0	0	1	<1	4	2	17	8	0	0	1	<1

6. If hatchery stocking were stopped in this section, how would this change affect your fishing activity on **this s** of the St. Joe River. (Please select the one that best describes your feelings)

	Stop fishing		Decrease fishing		No change		Increase fishing		Begin fishing	
	No.	%	No.	%	No.	%	No.	%	No.	%
Section 1										
Bait	0	0	1	14	0	0	0	0	0	0
Fly	1	14	0	0	2	29	0	0	0	0
Lure	0	0	0	0	3	43	0	0	0	0
Section 2										
Bait	0	0	0	0	2	18	0	0	0	0
Fly	0	0	0	0	3	27	1	9	1	9
Lure	0	0	1	9	3	27	0	0	0	0
Section 3										
Bait	1	2	7	12	10	18	1	2	0	0
Fly	0	0	5	9	22	39	2	4	1	2
Lure	0	0	1	2	6	11	1	2	0	0
Section 4 (catch-and-release)										
Bait	0	0	0	0	0	0	0	0	0	0
Fly	2	2	4	8	72	55	32	24	7	5
Lure	1	1	2	2	5	4	0	0	0	0
Total										
Bait	1	1	8	4	12	6	1	1	0	0
Fly	3	2	9	5	99	50	35	18	9	5
Lure	1	1	4	2	17	9	1	1	0	0

Appendix E. Continued.

7. Due to the cost of raising hatchery trout ($.60 each to rear and stock), the Department tries to stock trout only wh at least 40% of the fish stocked are caught (this costs $1.50 per fish caught). I would support eliminating stocki in the St. Joe River where less than 40% of the fish stocked were caught.

	Yes		No	
	No.	%	No.	%
		Section 1		
Bait	1	14	0	0
Fly	2	29	1	14
Lure	0	0	3	43
		Section 2		
Bait	0	0	2	18
Fly	4	36	1	9
Lure	2	18	2	18
		Section 3		
Bait	6	11	13	23
Fly	20	36	10	18
Lure	4	7	3	5
		Section 4 (catch-and-release)		
Bait	0	0	0	0
Fly	89	68	33	25
Lure	4	3	4	3
		Total		
Bait	7	3	15	7
Fly	115	56	45	22
Lure	10	5	12	6

8. I would support the elimination of stocking hatchery trout in the section of St. Joe River between the old railro bridge at Fall Creek and Prospector Creek, if ponds were constructed along the river and stocked with hatchery tro I could keep.

	Yes		No	
	No.	%	No.	%
		Section 1		
Bait	1	14	0	0
Fly	2	29	1	14
Lure	1	14	2	29
		Section 2		
Bait	0	0	2	18
Fly	3	27	2	18
Lure	2	18	2	18

Appendix E. Continued.

	Yes		No	
	No.	%	No.	%
		Section 3		
Bait	3	5	16	29
Fly	9	16	20	36
Lure	2	3	5	9
		Section 4 (catch-and-release)		
Bait	0	0	0	0
Fly	52	41	67	53
Lure	1	1	7	6
		Total		
Bait	4	2	18	9
Fly	66	33	90	45
Lure	6	3	16	8

SECTION 4 This section pertains **only to the tributaries** of the St. Joe River from ***old railroad bridge at Fall Creek to Prospector Creek.***

1. Do you fish in the tributaries to the St. Joe River between old railroad bridge at Fall Creek and Prospector Cr

	Yes		No	
	No.	%	No.	%
		Section 1		
Bait	1	14	0	0
Fly	3	43	0	0
Lure	1	14	2	29
		Section 2		
Bait	0	0	2	18
Fly	2	18	3	27
Lure	1	9	3	27
		Section 3		
Bait	15	27	3	5
Fly	17	30	13	23
Lure	6	11	2	4
		Section 4 (catch-and-release)		
Bait	0	0	0	0
Fly	29	2268	95	72
Lure	1	1	7	5
		Total		
Bait	16	8	5	2
Fly	51	24	114	55
Lure	9	4	14	7

Appendix E. Continued.

2. In the last 12 months, how many days have you fished in the tributaries to the St. Joe River between old railro bridge at Fall Creek and Prospector Creek? (Please check one)

	1-5		6-10		11-15		16-20		21-25		>25		None	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Section 1														
Bait	1	14	0	0	0	0	0	0	0	0	0	0	0	0
Fly	2	29	0	0	0	0	1	14	0	0	0	0	0	0
Lure	1	14	1	14	0	0	0	0	0	0	0	0	1	14
Section 2														
Bait	0	0	0	0	0	0	0	0	0	0	0	0	2	18
Fly	2	18	0	0	0	0	0	0	0	0	0	0	3	27
Lure	2	18	0	0	0	0	0	0	0	0	0	0	2	18
Section 3														
Bait	9	16	3	5	1	2	0	0	1	2	0	0	4	7
Fly	12	21	3	5	1	2	1	2	0	0	0	0	13	23
Lure	3	5	1	2	1	2	0	0	0	0	1	2	2	4
Section 4 (catch-and-release)														
Bait	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fly	31	24	1	1	0	0	0	0	0	0	0	0	89	69
Lure	2	2	0	0	0	0	0	0	0	0	0	0	6	5
Total														
Bait	10	5	3	1	1	<1	0	0	1	<1	0	0	6	3
Fly	45	22	4	2	1	<1	2	1	0	0	0	0	105	52
Lure	8	4	2	1	1	<1	0	0	0	0	1	<1	11	5

3. In general, I feel that fishing regulations on the tributaries in **this section** of the St. Joe River allow me to keep enough fish (current limit for trout is six fish). (Please select the one that best describes your feelings).

	Strongly disagree		Disagree		Neutral		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
Section 1										
Bait	0	0	0	0	1	14	0	0	0	0
Fly	0	0	1	14	0	0	1	14	1	14
Lure	0	0	0	0	0	0	3	43	0	0
Section 2										
Bait	0	0	0	0	1	9	1	9	0	0
Fly	0	0	1	9	1	9	2	18	1	9
Lure	0	0	0	0	0	0	3	27	1	9

Appendix E. Continued.

	Strongly disagree		Disagree		Neutral		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 3					
Bait	0	0	0	0	4	7	10	18	4	7
Fly	3	5	0	0	15	27	11	20	1	2
Lure	0	0	2	4	1	2	3	5	2	4
					Section 4 (catch-and-release)					
Bait	0	0	0	0	0	0	0	0	0	0
Fly	5	4	1	1	51	41	26	23	30	24
Lure	0	0	1	1	6	5	1	1	0	0
					Total					
Bait	0	0	0	0	6	3	11	7	4	2
Fly	8	4	3	2	67	34	40	21	33	17
Lure	0	0	3	2	7	4	10	5	3	2

4. If the bag limit was reduced on the tributaries, how would this change affect your fishing activity in these stream
(Please select the one that best describes your feelings)

	Stop fishing		Decrease fishing		No change		Increase fishing		Begin fishing	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 1					
Bait	0	0	0	0	1	14	0	0	0	0
Fly	2	29	0	0	1	14	0	0	0	0
Lure	0	0	1	14	2	29	0	0	0	0
					Section 2					
Bait	0	0	0	0	2	18	0	0	0	0
Fly	0	0	0	0	4	36	0	0	1	9
Lure	0	0	0	0	3	27	0	0	1	9
					Section 3					
Bait	1	2	6	11	9	16	2	4	0	0
Fly	0	0	1	2	19	35	8	15	1	2
Lure	0	0	2	4	5	9	1	2	0	0
					Section 4 (catch-and-release)					
Bait	0	0	0	0	0	0	0	0	0	0
Fly	2	2	0	0	75	60	29	23	12	10
Lure	0	0	1	1	5	4	0	0	1	1
					Total					
Bait	1	1	6	3	12	6	2	1	0	0
Fly	4	2	1	1	99	50	37	19	14	7
Lure	0	0	4	2	15	8	1	1	2	1

Appendix E. Continued.

5. It is important to me to have uniform regulations on the tributaries and the mainstem knowing that harvest m be reduced.

	Strongly disagree		Disagree		Neutral		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 1					
Bait	0	0	0	0	0	0	1	14	0	0
Fly	0	0	0	0	2	29	0	0	1	14
Lure	0	0	0	0	1	14	0	0	1	14
					Section 2					
Bait	0	0	1	9	0	0	1	9	0	0
Fly	0	0	1	9	0	0	3	27	1	9
Lure	0	0	0	0	2	18	2	18	0	0
					Section 3					
Bait	2	4	5	9	2	4	6	11	3	5
Fly	1	2	2	4	9	16	10	18	7	12
Lure	2	4	0	0	2	4	4	7	1	2
					Section 4 (catch-and-release)					
Bait	0	0	0	0	0	0	0	0	0	0
Fly	9	6	17	12	37	27	31	22	28	20
Lure	1	1	1	1	2	1	3	2	1	1
					Total					
Bait	2	1	6	3	2	1	8	4	3	1
Fly	10	5	20	10	48	24	44	22	37	18
Lure	3	1	1	<1	6	3	9	4	3	1

6. It is important to me to have the opportunity to harvest a limit of fish in the tributaries knowing that fishing regulations would be more complicated.

	Strongly disagree		Disagree		Neutral		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 1					
Bait	0	0	0	0	0	0	1	14	0	0
Fly	0	0	0	0	0	0	2	29	1	14
Lure	0	0	0	0	0	0	1	14	2	29
					Section 2					
Bait	0	0	0	0	0	0	1	9	1	9
Fly	1	9	2	18	2	18	0	0	0	0
Lure	0	0	0	0	1	9	1	9	2	18

Appendix E. Continued.

	Strongly disagree		Disagree		Neutral		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 3					
Bait	1	2	1	2	6	11	6	11	5	9
Fly	1	2	7	12	11	20	10	18	1	2
Lure	0	0	2	4	3	5	2	4	1	2
					Section 4 (catch-and-release)					
Bait	0	0	0	0	0	0	0	0	0	0
Fly	8	6	54	39	26	19	33	24	9	6
Lure	1	1	1	1	5	3	2	1	0	0
					Total					
Bait	1	<1	1	<1	6	3	8	4	6	3
Fly	10	5	63	29	40	19	43	20	12	6
Lure	1	<1	3	1	9	4	6	3	5	2

SECTION 5. These questions pertain to **guided fishing trips** on the St. Joe River. (Please circle the number that best describes your feelings).

1. Commercially **guided walk and wade** fishing trips are appropriate on the St. Joe River.

	Strongly disagree		Disagree		Neutral		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 1					
Bait	1	14	0	0	0	0	0	0	0	0
Fly	1	14	1	14	0	0	1	4	0	0
Lure	2	29	1	14	0	0	0	0	0	0
					Section 2					
Bait	0	0	0	0	2	18	0	0	0	0
Fly	2	18	2	18	0	0	1	9	0	0
Lure	1	9	2	18	1	9	0	0	0	0
					Section 3					
Bait	8	14	7	13	3	5	0	0	1	2
Fly	7	13	6	11	11	20	5	9	0	0
Lure	2	4	1	2	2	4	3	5	0	0
					Section 4 (catch-and-release)					
Bait	0	0	0	0	0	0	0	0	0	0
Fly	40	29	15	11	29	21	34	25	10	7
Lure	3	2	2	1	3	2	0	0	0	0
					Total					
Bait	9	4	7	3	5	2	0	0	1	<1
Fly	50	24	24	11	40	19	41	20	10	5
Lure	8	4	6	3	6	3	3	1	0	0

Appendix E. Continued.

2. Commercially **guided float boat** fishing trips are appropriate on the St. Joe River.

	Strongly disagree		Disagree		Neutral		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 1					
Bait	1	14	0	0	0	0	0	0	0	0
Fly	3	43	0	0	0	0	0	0	0	0
Lure	2	29	1	14	0	0	0	0	0	0
					Section 2					
Bait	0	0	0	0	2	18	0	0	0	0
Fly	3	27	2	18	0	0	0	0	0	0
Lure	1	9	2	18	1	9	0	0	0	0
					Section 3					
Bait	8	14	6	11	2	4	2	4	1	2
Fly	11	20	7	13	7	13	3	5	1	2
Lure	3	5	2	4	0	0	3	5	0	0
					Section 4					
Bait	0	0	0	0	0	0	0	0	0	0
Fly	56	41	22	16	28	21	19	14	3	2
Lure	4	3	1	1	2	1	1	1	0	0
					Total					
Bait	9	4	6	3	4	2	2	1	1	<1
Fly	73	35	31	15	35	17	22	11	4	2
Lure	7	3	6	3	3	1	4	2	0	0

3. The number of guided fishing trips on the St. Joe River is (too low___, just right___, too high___, don't know __).

	Too low		Just right		Too high		Do not know	
	No.	%	No.	%	No.	%	No.	%
			Section 1					
Bait	0	0	0	0	1	14	0	0
Fly	0	0	0	0	3	43	0	0
Lure	0	0	1	14	0	0	2	29
			Section 2					
Bait	0	0	0	0	0	0	2	18
Fly	0	0	0	0	2	18	3	27
Lure	0	0	0	0	1	9	3	27
			Section 3					
Bait	1	2	1	2	5	9	9	17
Fly	0	0	2	4	7	13	20	38
Lure	0	0	0	0	2	4	6	11

Appendix E. Continued.

	Too low		Just right		Too high		Do not know	
	No.	%	No.	%	No.	%	No.	%
	Section 4 (catch-and-release)							
Bait	0	0	0	0	0	0	0	0
Fly	2	2	14	11	32	24	75	57
Lure	0	0	1	1	3	2	4	3
	Total							
Bait	1	<1	1	<1	6	3	11	5
Fly	2	1	16	8	44	22	98	49
Lure	0	0	2	1	6	3	15	7

SECTION 6. The following questions pertain to your overall knowledge of the Department of Fish and Game.

1. How well does the Department manage the supply of game fish for fishing in the St. Joe River?

	Poor		Fair		Good		Excellent		Do not know	
	No.	%	No.	%	No.	%	No.	%	No.	%
	Section 1									
Bait	0	0	1	14	0	0	0	0	0	0
Fly	0	0	2	19	1	14	0	0	0	0
Lure	0	0	1	14	1	14	0	0	1	14
	Section 2									
Bait	0	0	1	9	0	0	0	0	1	9
Fly	1	9	1	9	2	18	0	0	1	9
Lure	0	0	2	18	2	18	0	0	0	0
	Section 3									
Bait	1	2	0	0	8	14	5	9	5	9
Fly	2	4	4	7	13	23	6	11	5	9
Lure	1	2	1	2	2	4	2	4	2	4
	Section 4 (catch-and-release)									
Bait	0	0	0	0	0	0	0	0	0	0
Fly	2	1	6	4	63	46	23	17	36	26
Lure	0	0	2	1	4	3	1	1	1	1
	Total									
Bait	1	<1	2	1	8	4	5	2	6	3
Fly	5	2	13	6	79	37	29	14	42	20
Lure	1	<1	6	3	9	4	3	1	4	2

Appendix E. Continued.

2. How well does the Department manage and protect the fish resources in the St Joe River?

	Poor		Fair		Good		Excellent		Do not know	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 1					
Bait	0	0	0	0	1	14	0	0	0	0
Fly	2	29	0	0	1	14	0	0	0	0
Lure	0	0	1	14	1	14	0	0	1	14
					Section 2					
Bait	0	0	0	0	0	0	0	0	2	18
Fly	27	0	0	0	0	0	0	0	2	18
Lure	1	9	0	0	2	18	1	9	0	0
					Section 3					
Bait	0	0	2	4	7	12	3	5	7	12
Fly	3	5	3	5	15	26	5	9	4	7
Lure	1	2	1	2	3	5	2	4	1	2
					Section 4 (catch-and-release)					
Bait	0	0	0	0	0	0	0	0	0	0
Fly	5	4	19	14	54	39	26	19	26	19
Lure	1	1	2	1	3	2	1	1	1	1
					Total					
Bait	0	0	2	1	8	4	3	1	9	4
Fly	13	6	22	10	70	33	31	15	30	14
Lure	3	1	4	2	9	4	4	2	3	1

3. How well does the Department manage and protect fish habitat in the St. Joe River?

	Poor		Fair		Good		Excellent		Do not know	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 1					
Bait	0	0	1	14	0	0	0	0	0	0
Fly	0	0	2	29	1	14	0	0	0	0
Lure	0	0	0	0	2	29	0	0	1	14
					Section 2					
Bait	0	0	0	0	1	9	0	0	1	9
Fly	2	18	1	9	0	0	0	0	2	18
Lure	0	0	0	0	2	18	1	9	1	9
					Section 3					
Bait	0	0	3	5	6	11	3	5	7	12
Fly	1	2	4	7	9	16	13	23	3	5
Lure	1	2	1	2	3	5	2	4	1	2

Appendix E. Continued.

	Poor		Fair		Good		Excellent		Do not know	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 4					
Bait	0	0	0	0	0	0	0	0	0	0
Fly	6	4	10	7	49	36	33	24	32	23
Lure	0	0	3	2	2	1	1	1	2	1
					Total					
Bait	0	0	4	2	7	3	3	1	8	4
Fly	9	4	17	8	59	28	46	22	37	17
Lure	1	<1	4	2	9	4	4	2	5	2

4. How well has the Department incorporated sportsmen's wants and needs into management of the St. J River?

	Poor		Fair		Good		Excellent		Do not know	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 1					
Bait	0	0	0	0	0	0	0	0	1	14
Fly	0	0	3	43	0	0	0	0	0	0
Lure	0	0	2	29	0	0	1	14	1	14
					Section 2					
Bait	0	0	1	9	0	0	0	0	1	9
Fly	2	18	1	9	1	9	0	0	1	9
Lure	0	0	2	18	1	9	0	0	1	9
					Section 3					
Bait	0	0	6	11	6	11	3	5	4	7
Fly	1	2	3	5	13	23	5	9	8	14
Lure	1	2	0	0	2	4	3	5	2	4
					Section 4 (catch-and-release)					
Bait	0	0	0	0	0	0	0	0	0	0
Fly	3	2	11	8	50	36	19	14	47	34
Lure	0	0	2	1	5	4	1	1	0	0
					Total					
Bait	0	0	7	3	6	3	3	1	6	3
Fly	4	1	18	8	64	30	24	11	56	26
Lure	1	<1	6	3	8	4	5	2	4	2

SECTION 7. The following questions are optional, but will help us better understand the anglers who fish tl St. Joe River drainage.

Appendix E. Continued.

1. What is your gender?

	Male	Female
Bait	22	4
Fly	160	11
Lure	25	1

2. What is your marital status?

	Married	Single
Bait	21	5
Fly	114	57
Lure	18	8

3. Do you have any children living at home?

	Yes	No
Bait	18	8
Fly	61	110
Lure	20	6

4. Please select the response that best describes the area where you live. (Please check one).

	Bait	Fly	Lure
Rural area	12	22	8
Small town (<4,999)	3	32	6
Small city (5,000-49,999)	3	40	3
Large city (50,000-500,000)	0	7	1
Suburb	7	58	8
Very large city (>500,000)	1	11	0

5. What is the highest level of education you have completed? (Please check one).

Education	Bait	Fly	Lure
Some high school	2	13	3
High school graduate	5	7	6
Trade or technical school	3	13	1
Some college	7	38	11
College graduate	3	55	2
Post graduate degree	6	45	3

Appendix E. Continued.

6. Which category best describes your occupation. (Please check one).

Occupation	Bait	Fly	Lure
Professional/technical	7	64	5
Skilled worker	6	21	3
Skilled operator	5	12	5
Unskilled laborer	--	1	--
Clerical/sales	--	4	1
Logger	1	2	--
Miner	--	--	--
Service worker	--	4	--
Farmer	--	--	--
Student	--	17	3
Retired	2	19	4
Housewife	1	1	--
Self-employed	3	16	3
Other	1	10	2

7. Please give your age. ________ Years

	Number of anglers	Range	Mean	Median
Bait	22	0-76	41	40
Fly	171	0-80	42	42
Lure	26	16-52	40	41

Thank you for your time and assistance in completing this questionnaire. Your assistance will help expand our understandi of the men and women involved with the fishing in the Spokane drainage.

Appendix F. Angler responses to the Spokane River drainage angler survey summarized by gear type (bait, fly, lure) from the North Fork Coeur d'Alene River, Idaho, 1996.

SPOKANE RIVER DRAINAGE ANGLER SURVEY

SECTION 1. These questions pertain to the **North Fork Coeur d'Alene River only.**

1. How many years have you fished the North Fork Coeur d'Alene River at least once?

	Number of anglers	Range	Mean	Median
Bait	28	0-43	10	5
Fly	66	0-70	12	7
Lure	18	2-43	12	9

2. How many days in the past 5 years have you fished the North Fork Coeur d'Alene River? (Please check one)

	1-5		6-10		11-15		16-20		21-25		>25	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 1							
Bait	1	11	2	22	1	11	2	22	0	0	0	0
Fly	0	0	0	0	0	0	0	0	0	0	1	11
Lure	0	0	0	0	1	11	0	0	0	0	1	11
					Section 2							
Bait	0	0	0	0	1	14	0	0	1	14	1	14
Fly	1	14	0	0	0	0	0	0	0	0	2	29
Lure	1	14	0	0	0	0	0	0	0	0	0	0
					Section 3							
Bait	1	5	1	5	1	5	1	5	0	0	2	9
Fly	4	18	1	5	1	5	0	0	0	0	5	23
Lure	1	5	1	5	1	5	0	0	1	5	1	5
					Section 4							
Bait	2	6	0	0	0	0	0	0	0	0	1	3
Fly	3	9	3	9	3	9	3	9	1	3	1	3
Lure	1	3	2	6	1	3	0	0	0	0	1	3
					Section 5							
Bait	0	0	0	0	0	0	0	0	1	4	0	0
Fly	8	33	3	13	2	8	3	13	0	0	6	25
Lure	0	0	1	0	0	0	0	0	0	0	0	0
					Total							
Bait	4	4	3	3	3	3	3	3	3	3	5	5
Fly	16	16	7	7	6	6	4	4	3	3	27	27
Lure	3	3	4	4	4	4	0	0	1	1	3	3

Appendix F. Continued.

3. How many days have you fished the North Fork Coeur d'Alene River in the last 12 months?

	Number of anglers	Range	Mean	Median
Bait	28	0-40	9	8
Fly	66	1-89	11	5
Lure	18	1-59	12	6

4. Do you fish on the North Fork Coeur d'Alene River (less often___, same___, more often___) now as you did in previous years?

	Less often		Same		More often	
	No.	%	No.	%	No.	%
			Section 1			
Bait	1	11	2	22	3	33
Fly	0	0	1	11	0	0
Lure	0	0	1	11	1	11
			Section 2			
Bait	0	0	0	0	2	33
Fly	2	33	0	0	1	17
Lure	0	0	1	17	0	0
			Section 3			
Bait	2	10	1	5	3	15
Fly	4	20	4	20	1	5
Lure	2	10	2	10	1	5
			Section 4			
Bait	2	6	2	6	1	3
Fly	13	37	7	20	5	14
Lure	2	6	3	9	0	0
			Section 5			
Bait	0	0	0	0	1	5
Fly	3	14	10	45	6	27
Lure	0	0	1	5	0	0
			Total			
Bait	5	5	5	5	10	11
Fly	22	24	22	24	13	14
Lure	4	4	8	9	2	2

5. What type (s) of tackle do you fish with **most often** on the North Fork Coeur d'Alene River? (Please check one).
_25_ bait _65_ lures _15_ flies

Appendix F. Continued.

6. Which section of the North Fork Coeur d'Alene River do you most **prefer** to fish? (Please check one).

	Yellow Dog Cr. downstream		Yellow Dog Cr. Upstream		Tributaries to North Fork Coeur d'Alene River downstream of Yellow Dog Cr.		No preference	
	No.	%	No.	%	No.	%	No.	%
				Section 1				
Bait	1	11	1	11	2	22	2	22
Fly	0	0	1	11	0	0	0	0
Lure	1	11	0	0	0	0	1	11
				Section 2				
Bait	2	29	0	0	0	0	1	14
Fly	2	29	0	0	1	14	0	0
Lure	1	14	0	0	0	0	0	0
				Section 3				
Bait	4	18	0	0	0	0	2	9
Fly	6	27	1	5	1	5	3	14
Lure	2	9	0	0	1	5	2	9
				Section 4				
Bait	3	9	0	0	0	0	2	6
Fly	8	23	9	26	3	9	5	14
Lure	2	6	0	0	0	0	3	9
				Section 5				
Bait	1	4	0	0	0	0	0	0
Fly	0	0	19	83	0	0	2	9
Lure	1	4	0	0	0	0	0	0
				Total				
Bait	11	12	1	1	2	2	7	7
Fly	16	17	30	32	5	5	10	11
Lure	7	7	0	0	0	0	6	6

7. Some anglers may **prefer** to fish one area but **actually fish** in another. In the last five years, which section of the North Fork Coeur d'Alene River did you **most often** fish? (Please check one)

	Yellow Dog Cr. downstream		Yellow Dog Cr. Upstream		Tributaries to North Fork Coeur d'Alene River downstream of Yellow Dog Cr.		No preference	
	No.	%	No.	%	No.	%	No.	%
				Section 1				
Bait	1	13	1	13	2	25	1	13
Fly	1	13	0	0	0	0	0	0
Lure	1	13	1	13	0	0	0	0

Appendix F. Continued.

	Yellow Dog Cr. downstream		Yellow Dog Cr. Upstream		Tributaries to North Fork Coeur d'Alene River downstream of Yellow Dog Cr.		No preference	
	No.	%	No.	%	No.	%	No.	%
				Section 2				
Bait	3	43	0	0	0	0	0	0
Fly	2	29	0	0	0	0	1	14
Lure	1	14	0	0	0	0	0	0
				Section 3				
Bait	5	24	0	0	0	0	1	5
Fly	7	33	2	10	1	5	0	0
Lure	3	14	0	0	1	5	1	5
				Section 4				
Bait	4	12	0	0	0	0	1	3
Fly	10	29	7	21	3	9	4	12
Lure	3	9	0	0	0	0	2	6
				Section 5				
Bait	0	0	0	0	1	5	0	0
Fly	2	9	16	73	1	5	1	5
Lure	1	5	0	0	0	0	0	0
				Total				
Bait	12	13	1	1	3	3	3	3
Fly	22	24	25	27	5	5	6	7
Lure	9	10	1	1	1	1	3	3

Please circle the number that best describes your feelings.

8. I feel that fishing regulations for the North Fork Coeur d'Alene River are difficult to understand.

	Strongly disagree		Disagree		Undecided		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 1					
Bait	0	0	3	33	1	11	1	11	1	11
Fly	0	0	1	11	0	0	0	0	0	0
Lure	1	11	1	11	0	0	0	0	0	0
					Section 2					
Bait	1	14	0	0	0	0	1	14	0	0
Fly	0	0	2	29	0	0	0	0	1	14
Lure	0	0	1	14	0	0	0	0	0	0
					Section 3					
Bait	0	0	3	14	3	14	0	0	0	0
Fly	0	0	6	29	2	10	0	0	2	10
Lure	2	10	3	14	0	0	0	0	0	0

Appendix F. Continued.

	Strongly disagree		Disagree		Undecided		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 4					
Bait	0	0	2	6	0	0	3	9	0	0
Fly	6	17	13	37	0	0	5	14	1	3
Lure	0	0	3	9	1	3	1	3	0	0
					Section 5					
Bait	0	0	1	4	0	0	0	0	0	0
Fly	6	25	13	54	2	8	1	4	0	0
Lure	0	0	0	0	0	0	1	4	0	0
					Total					
Bait	1	1	9	10	4	4	6	7	1	1
Fly	12	13	35	38	2	2	5	5	4	4
Lure	3	3	8	9	1	1	1	1	0	0

9. The current fishing regulations on the North Fork Coeur d'Alene River are easy to follow.

	Strongly disagree		Disagree		Undecided		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 1					
Bait	1	11	1	11	1	11	3	33	0	0
Fly	0	0	0	0	0	0	1	11	0	0
Lure	1	11	0	0	0	0	1	11	0	0
					Section 2					
Bait	0	0	2	29	0	0	1	14	0	0
Fly	1	14	0	0	0	0	2	29	0	0
Lure	0	0	0	0	0	0	1	14	0	0
					Section 3					
Bait	1	5	0	0	2	9	3	14	0	0
Fly	1	5	0	0	2	9	7	32	1	5
Lure	1	5	0	0	0	0	4	18	0	0
					Section 4					
Bait	0	0	2	6	0	0	3	9	0	0
Fly	0	0	5	15	0	0	13	38	6	18
Lure	0	0	2	6	0	0	3	9	0	0
					Section 5					
Bait	0	0	0	0	0	0	1	4	0	0
Fly	1	4	1	4	2	8	15	63	3	13
Lure	0	0	1	4	0	0	0	0	0	0

Appendix F. Continued.

	Strongly disagree		Disagree		Undecided		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Total					
Bait	2	2	5	5	3	3	11	11	0	0
Fly	3	3	6	6	4	4	38	40	10	10
Lure	2	2	3	3	0	0	9	9	0	0

10. Are you familiar with the Fish and Game special brochure on fishing in the Spokane River drainage?

	Yes		No	
	No.	%	No.	%
	Section 1			
Bait	1	11	5	56
Fly	0	0	1	11
Lure	0	0	2	22
	Section 2			
Bait	0	0	3	43
Fly	0	0	3	43
Lure	0	0	1	14
	Section 3			
Bait	0	0	6	27
Fly	1	5	10	45
Lure	1	5	4	18
	Section 4			
Bait	2	6	3	9
Fly	6	17	19	54
Lure	1	3	4	11
	Section 5			
Bait	0	0	1	4
Fly	5	21	17	71
Lure	0	0	1	4
	Total			
Bait	3	3	18	18
Fly	12	12	50	52
Lure	2	2	12	12

Appendix F. Continued.

If yes, Please rate the usefulness of this brochure to you in understanding the fishing regulations on the North Fork Coeur d'Alene River?

	Poor		Fair		Good		Excellent	
	No.	%	No.	%	No.	%	No.	%
				Section 1				
Bait	0	0	0	0	1	100	0	0
Fly	0	0	0	0	0	0	0	0
Lure	0	0	0	0	0	0	0	0
				Section 2				
Bait	0	0	0	0	0	0	0	0
Fly	0	0	0	0	0	0	0	0
Lure	0	0	0	0	0	0	0	0
				Section 3				
Bait	0	0	0	0	0	0	0	0
Fly	0	0	0	0	2	67	0	0
Lure	0	0	0	0	1	33	0	0
				Section 4				
Bait	0	0	1	9	1	9	0	0
Fly	0	0	3	27	3	27	2	18
Lure	0	0	1	9	0	0	0	0
				Section 5				
Bait	0	0	0	0	0	0	0	0
Fly	0	0	1	20	3	60	1	20
Lure	0	0	0	0	0	0	0	0
				Total				
Bait	0	0	1	5	2	10	0	0
Fly	0	0	4	19	8	38	3	14
Lure	0	0	1	5	1	5	1	5

Please circle the number that best describes your feelings.

11. I feel it is important to allow catch-and-release fishing on a portion of the North Fork Coeur d'Alene River.

	Strongly disagree		Disagree		Undecided		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 1					
Bait	0	0	2	22	1	11	2	22	1	11
Fly	0	0	0	0	0	0	0	0	1	11
Lure	0	0	0	0	0	0	2	22	0	0

Appendix F. Continued.

	Strongly disagree		Disagree		Undecided		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
Fly	0	0	0	0	0	0	1	14	2	29
Lure	0	0	0	0	0	0	1	14	0	0
					Section 3					
Bait	1	5	0	0	0	0	3	14	2	10
Fly	0	0	0	0	2	10	1	5	7	33
Lure	0	0	0	0	2	10	2	10	1	5
					Section 4					
Bait	0	0	1	3	1	3	3	9	0	0
Fly	2	6	1	3	3	9	6	17	13	37
Lure	1	3	0	0	1	3	2	6	1	3
					Section 5					
Bait	0	0	0	0	0	0	0	0	1	4
Fly	0	0	1	4	0	0	3	13	18	75
Lure	0	0	1	4	0	0	0	0	0	0
					Total					
Bait	1	1	4	4	2	2	10	10	4	4
Fly	2	2	2	2	5	5	11	11	41	43
Lure	1	1	1	1	3	3	7	7	2	2

12. I would support expanding the catch-and-release section of the North Fork Coeur d'Alene River knowing that the harvest section would be smaller.

	Strongly disagree		Disagree		Undecided		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 1					
Bait	1	11	1	11	1	11	2	22	1	11
Fly	0	0	0	0	0	0	0	0	1	11
Lure	0	0	0	0	0	0	2	22	0	0
					Section 2					
Bait	0	0	2	29	1	14	0	0	0	0
Fly	1	14	0	0	0	0	1	14	1	14
Lure	0	0	1	14	0	0	0	0	0	0
					Section 3					
Bait	2	9	2	9	0	0	2	9	0	0
Fly	2	9	2	9	4	18	1	5	2	9
Lure	2	9	1	5	2	9	0	0	0	0

Appendix F. Continued.

	Strongly disagree		Disagree		Undecided		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
Fly	3	9	4	11	5	14	3	9	10	29
Lure	1	3	1	3	0	0	3	9	0	0
Section 5										
Bait	0	0	0	0	1	4	0	0	0	0
Fly	0	0	1	4	2	8	3	13	16	67
Lure	1	4	0	0	0	0	0	0	0	0
Total										
Bait	3	3	9	9	4	4	3	3	1	1
Fly	6	6	7	7	11	11	8	8	30	31
Lure	4	4	3	3	2	2	5	5	0	0

13. I think it is important to allow harvest fishing on a portion of the North Fork Coeur d'Alene River.

	Strongly disagree		Disagree		Undecided		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
Section 1										
Bait	0	0	1`	11	0	0	5	56	0	0
Fly	0	0	0	0	0	0	1	11	0	0
Lure	0	0	0	0	0	0	1	11	1	11
Section 2										
Bait	0	0	0	0	0	0	2	29	1	14
Fly	0	0	0	0	1	14	2	29	0	0
Lure	0	0	0	0	0	0	1	14	0	0
Section 3										
Bait	0	0	0	0	1	5	2	9	3	14
Fly	1	5	1	5	2	9	4	18	3	14
Lure	0	0	0	0	0	0	3	14	2	9
Section 4										
Bait	0	0	0	0	0	0	5	14	0	0
Fly	4	11	2	6	3	9	12	34	4	11
Lure	0	0	0	0	0	0	5	14	0	0
Section 5										
Bait	0	0	0	0	1	4	0	0	0	0
Fly	5	21	3	13	5	21	7	29	2	8
Lure	0	0	0	0	0	0	0	0	1	4
Total										
Bait	0	0	1	1	2	2	14	14	4	4
Fly	10	10	6	6	11	11	26	27	9	9
Lure	0	0	0	0	0	0	10	10	4	4

Appendix F. Continued.

14. I would support expanding the harvest section of the North Fork Coeur d'Alene River knowing that the catch-and-release section would have to become smaller.

	Strongly disagree		Disagree		Undecided		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 1					
Bait	0	0	1	11	2	22	3	33	0	0
Fly	1	11	0	0	0	0	0	0	0	0
Lure	0	0	1	11	0	0	1	11	0	0
					Section 2					
Bait	0	0	1	14	2	29	0	0	0	0
Fly	2	29	1	14	0	0	0	0	0	0
Lure	0	0	0	0	0	0	1	14	0	0
					Section 3					
Bait	0	0	3	14	0	0	2	9	1	5
Fly	2	9	7	32	0	0	2	9	0	0
Lure	0	0	0	0	4	18	0	0	1	5
					Section 4					
Bait	0	0	1	3	0	0	4	11	0	0
Fly	11	31	7	20	4	11	3	9	0	0
Lure	0	0	3	9	1	3	1	3	0	0
					Section 5					
Bait	0	0	1	4	0	0	0	0	0	0
Fly	15	63	4	17	1	4	2	8	0	0
Lure	0	0	0	0	0	0	1	4	0	0
					Total					
Bait	0	0	7	7	4	4	9	9	1	1
Fly	31	32	19	20	5	5	7	7	0	0
Lure	0	0	4	4	5	5	4	4	1	1

15. I would prefer regulations which would result in me catching more fish, even if it meant I could keep fewer fish to take home.

	Strongly disagree		Disagree		Undecided		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 1					
Bait	0	0	0	0	1	11	5	56	0	0
Fly	0	0	0	0	0	0	1	11	0	0
Lure	0	0	0	0	1	11	1	11	0	0

Appendix F. Continued.

	Strongly disagree		Disagree		Undecided		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
Fly	0	0	0	0	1	14	1	14	1	14
Lure	0	0	0	0	0	0	1	14	0	0
					Section 3					
Bait	2	9	1	5	1	5	2	9	0	0
Fly	2	9	2	9	2	9	2	9	3	14
Lure	0	0	2	9	2	9	1	5	0	0
					Section 4					
Bait	0	0	2	6	1	3	2	6	0	0
Fly	1	3	5	14	3	9	7	20	9	26
Lure	0	0	0	0	1	3	4	11	0	0
					Section 5					
Bait	0	0	0	0	1	4	0	0	0	0
Fly	0	0	0	0	5	21	5	21	12	50
Lure	0	0	1	4	0	0	0	0	0	0
					Total					
Bait	2	2	4	4	6	6	9	9	0	0
Fly	3	3	7	7	11	11	16	16	25	26
Lure	0	0	3	3	4	4	7	7	0	0

16. I would prefer regulations which allow me to keep more fish now knowing it would result in fewer fish to catch on future trips.

	Strongly disagree		Disagree		Undecided		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 1					
Bait	1	11	3	33	0	0	2	22	0	0
Fly	1	11	0	0	0	0	0	0	0	0
Lure	0	0	2	22	0	0	0	0	0	0
					Section 2					
Bait	0	0	1	14	1	14	1	14	0	0
Fly	1	14	1	14	1	14	0	0	0	0
Lure	0	0	1	14	0	0	0	0	0	0
					Section 3					
Bait	1	5	3	14	1	5	0	0	1	5
Fly	6	27	3	14	1	5	1	5	0	0
Lure	0	0	2	9	3	14	0	0	0	0

Appendix F. Continued.

	Strongly disagree		Disagree		Undecided		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
Fly	16	46	7	20	2	6	0	0	0	0
Lure	1	3	4	11	0	0	0	0	0	0
					Section 5					
Bait	0	0	0	0	1	4	0	0	0	0
Fly	18	75	3	13	1	4	0	0	0	0
Lure	0	0	0	0	1	4	0	0	0	0
					Total					
Bait	2	2	11	11	3	3	4	4	1	1
Fly	42	43	14	14	5	5	1	1	0	0
Lure	1	1	9	9	4	4	0	0	0	0

SECTION 2. These questions pertain to your feelings in general about trout fishing. Please circle the number that best describes your feelings.

1. I enjoy eating the trout I catch.

	Strongly disagree		Disagree		Undecided		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 1					
Bait	0	0	1	14	1	14	2	29	2	29
Fly	0	0	0	0	0	0	1	14	0	0
Lure	0	0	0	0	0	0	1	14	1	14
					Section 2					
Bait	0	0	0	0	0	0	1	14	2	29
Fly	0	0	2	29	0	0	1	14	0	0
Lure	0	0	0	0	0	0	1	14	0	0
					Section 3					
Bait	0	0	1	5	0	0	2	9	3	14
Fly	0	0	3	14	1	5	4	18	3	14
Lure	0	0	0	0	0	0	3	14	2	9
					Section 4					
Bait	0	0	0	0	0	0	1	3	4	11
Fly	5	14	3	9	2	6	11	31	4	11
Lure	0	0	1	3	0	0	2	6	2	6

Appendix F. Continued.

	Strongly disagree		Disagree		Undecided		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
Fly	9	38	3	13	1	4	6	25	3	13
Lure	0	0	0	0	0	0	0	0	1	4
					Total					
Bait	0	0	2	2	1	1	6	6	12	13
Fly	14	15	11	12	4	4	23	24	10	11
Lure	0	0	1	1	0	0	7	7	6	6

2. I would rather catch one trophy trout than my limit of average size trout.

	Strongly disagree		Disagree		Undecided		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 1					
Bait	0	0	4	44	0	0	2	22	0	0
Fly	0	0	0	0	0	0	0	0	1	11
Lure	1	11	0	0	0	0	1	11	0	0
					Section 2					
Bait	1	14	1	14	1	14	1	14	1	14
Fly	0	0	1	14	0	0	1	14	1	14
Lure	0	0	1	14	0	0	0	0	0	0
					Section 3					
Bait	2	9	2	9	0	0	2	9	0	0
Fly	0	0	5	23	1	5	3	14	2	9
Lure	0	0	3	14	1	5	1	5	0	0
					Section 4					
Bait	0	0	4	11	0	0	1	3	0	0
Fly	1	3	14	40	2	6	2	6	6	17
Lure	0	0	0	0	1	3	3	9	1	3
					Section 5					
Bait	0	0	0	0	0	0	0	0	1	4
Fly	2	8	3	13	1	4	6	25	10	42
Lure	0	0	0	0	1	4	0	0	0	0
					Total					
Bait	1	1	10	11	0	0	6	6	2	2
Fly	3	3	23	24	4	4	12	13	20	21
Lure	1	1	4	4	3	3	5	5	1	1

Appendix F. Continued.

3. I often share my trout catch with others.

	Strongly disagree		Disagree		Undecided		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 1					
Bait	0	0	2	22	0	0	4	44	0	0
Fly	0	0	1	11	0	0	0	0	0	0
Lure	0	0	1	11	0	0	1	11	0	0
					Section 2					
Bait	0	0	1	14	0	0	1	14	1	14
Fly	0	0	2	29	0	0	0	0	1	14
Lure	0	0	1	14	0	0	0	0	0	0
					Section 3					
Bait	1	5	4	18	0	0	0	0	1	5
Fly	2	9	7	32	0	0	1	5	1	5
Lure	2	9	0	0	0	0	3	14	0	0
					Section 4					
Bait	1	3	2	6	0	0	1	3	1	3
Fly	7	21	9	26	1	3	6	18	1	3
Lure	0	0	2	6	0	0	3	9	0	0
					Section 5					
Bait	0	0	0	0	0	0	1	4	0	0
Fly	13	54	4	17	1	4	3	13	1	4
Lure	0	0	0	0	0	0	1	4	0	0
					Total					
Bait	2	2	9	9	0	0	7	7	3	3
Fly	22	23	23	24	2	2	10	10	4	4
Lure	2	2	4	4	0	0	8	8	0	0

4. I consider my fishing trip to be worthwhile, only if I catch trout.

	Strongly disagree		Disagree		Undecided		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 1					
Bait	0	0	3	33	0	0	3	33	0	0
Fly	0	0	0	0	0	0	0	0	1	11
Lure	0	0	1	11	0	0	0	0	1	11
					Section 2					
Bait	0	0	2	29	0	0	0	0	1	14
Fly	0	0	2	29	0	0	1	14	0	0
Lure	0	0	0	0	0	0	1	14	0	0

Appendix F. Continued.

	Strongly disagree		Disagree		Undecided		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
Fly	3	14	4	18	1	5	1	5	2	9
Lure	0	0	3	14	1	5	1	5	0	0
					Section 4					
Bait	0	0	2	6	0	0	2	6	1	3
Fly	5	14	11	31	0	0	6	17	3	9
Lure	1	3	3	9	0	0	1	3	0	0
					Section 5					
Bait	0	0	1	4	0	0	0	0	0	0
Fly	5	21	8	33	2	9	2	9	5	21
Lure	0	0	1	4	0	0	0	0	0	0
					Total					
Bait	0	0	9	9	1	1	7	7	4	4
Fly	13	13	25	26	3	3	10	10	11	11
Lure	1	1	7	7	1	1	5	5	0	0

5. I release most of the trout I catch.

	Strongly disagree		Disagree		Undecided		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 1					
Bait	0	0	0	0	0	0	5	56	0	0
Fly	0	0	0	0	0	0	0	0	1	11
Lure	0	0	0	0	0	0	2	22	0	0
					Section 2					
Bait	0	0	1	14	0	0	2	29	0	0
Fly	0	0	0	0	0	0	2	29	1	14
Lure	0	0	1	14	0	0	0	0	0	0
					Section 3					
Bait	0	0	0	0	0	0	5	23	1	5
Fly	0	0	1	5	1	5	4	18	5	23
Lure	0	0	4	18	1	5	0	0	0	0
					Section 4					
Bait	0	0	3	9	1	3	1	3	0	0
Fly	0	0	1	3	0	0	15	43	9	26
Lure	0	0	0	0	0	0	5	14	0	0

Appendix F. Continued.

	Strongly disagree		Disagree		Undecided		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
Fly	1	4	0	0	0	0	5	21	16	67
Lure	0	0	0	0	0	0	1	5	0	0
					Total					
Bait	0	0	4	4	1	1	14	14	2	2
Fly	1	1	2	2	1	1	26	27	32	33
Lure	0	0	5	5	1	1	8	8	0	0

6. I release all the trout I catch.

	Strongly disagree		Disagree		Undecided		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 1					
Bait	0	0	6	67	0	0	0	0	0	0
Fly	1	11	0	0	0	0	5	56	1	11
Lure	0	0	2	22	0	0	0	0	0	0
					Section 2					
Bait	1	14	2	29	0	0	0	0	0	0
Fly	0	0	2	29	0	0	0	0	1	14
Lure	0	0	1	14	0	0	0	0	0	0
					Section 3					
Bait	1	5	4	18	0	0	0	0	0	0
Fly	2	9	6	27	0	0	0	0	3	14
Lure	3	14	2	9	0	0	0	0	0	0
					Section 4					
Bait	1	3	4	12	0	0	0	0	0	0
Fly	3	9	13	38	3	9	0	0	5	15
Lure	0	0	4	12	1	3	0	0	0	0
					Section 5					
Bait	1	4	0	0	0	0	0	0	0	0
Fly	1	4	3	13	3	13	1	4	14	58
Lure	0	0	1	4	0	0	0	0	0	0
					Total					
Bait	4	4	16	17	1	1	0	0	0	0
Fly	6	6	24	25	6	6	1	1	24	25
Lure	3	3	10	10	1	1	0	0	0	0

Appendix F. Continued.

7. Catching a limit of trout is important to me.

	Strongly disagree		Disagree		Undecided		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 1					
Bait	0	0	3	33	1	11	2	22	0	0
Fly	1	11	0	0	0	0	0	0	0	0
Lure	0	0	1	11	0	0	1	11	0	0
					Section 2					
Bait	0	0	1	14	0	0	1	14	0	0
Fly	2	29	1	14	0	0	0	0	0	0
Lure	0	0	1	14	0	0	0	0	0	0
					Section 3					
Bait	0	0	3	14	1	5	2	9	0	0
Fly	2	9	8	36	0	0	1	5	0	0
Lure	0	0	2	9	3	14	0	0	0	0
					Section 4					
Bait	0	0	4	12	0	0	1	3	0	0
Fly	5	15	13	38	2	6	3	9	1	3
Lure	1	3	4	12	0	0	0	0	0	0
					Section 5					
Bait	0	0	1	4	0	0	0	0	0	0
Fly	16	67	4	17	0	0	1	4	1	4
Lure	0	0	1	4	0	0	0	0	0	0
					Total					
Bait	0	0	12	13	2	2	6	6	0	0
Fly	26	28	26	28	2	2	5	5	1	1
Lure	1	1	9	10	3	3	1	1	0	0

8. I enjoy catching more trout than my friends.

	Strongly disagree		Disagree		Undecided		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 1					
Bait	0	0	2	22	2	22	2	22	0	0
Fly	0	0	0	0	0	0	0	0	1	11
Lure	0	0	1	11	0	0	0	0	1	11
					Section 2					
Bait	1	14	0	0	0	0	2	29	0	0
Fly	0	0	1	14	0	0	1	14	1	14
Lure	0	0	1	14	0	0	0	0	0	0

Appendix F. Continued.

	Strongly disagree		Disagree		Undecided		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 3					
Bait	0	0	3	14	0	0	1	5	2	9
Fly	2	9	4	18	0	0	2	9	3	14
Lure	0	0	2	9	1	5	2	9	0	0
					Section 4					
Bait	0	0	3	9	1	3	1	3	0	0
Fly	6	18	8	24	6	18	3	9	1	3
Lure	2	6	1	3	1	3	1	3	0	0
					Section 5					
Bait	0	0	1	4	0	0	0	0	0	0
Fly	4	17	7	29	2	8	4	14	5	21
Lure	0	0	1	4	0	0	0	0	0	0
					Total					
Bait	1	1	9	9	3	3	6	6	2	2
Fly	12	13	20	21	8	8	10	10	11	11
Lure	2	2	6	6	2	2	3	3	1	1

9. I often keep all the trout I catch up to the legal limit.

	Strongly disagree		Disagree		Undecided		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 1					
Bait	0	0	5	56	0	0	1	11	0	0
Fly	1	11	0	0	0	0	0	0	0	0
Lure	0	0	2	22	0	0	0	0	0	0
					Section 2					
Bait	0	0	1	14	0	0	2	29	0	0
Fly	0	0	3	43	0	0	0	0	0	0
Lure	0	0	0	0	0	0	1	14	0	0
					Section 3					
Bait	0	0	3	14	1	5	2	9	0	0
Fly	4	18	4	18	0	0	3	14	0	0
Lure	1	5	1	5	0	0	3	14	0	0
					Section 4					
Bait	0	0	0	0	1	3	4	11	0	0
Fly	10	29	13	37	0	0	2	6	0	0
Lure	1	3	3	9	0	0	1	3	0	0

Appendix F. Continued.

	Strongly disagree		Disagree		Undecided		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 5					
Bait	0	0	1	4	0	0	0	0	0	0
Fly	15	63	6	25	0	0	1	4	0	0
Lure	0	0	0	0	0	0	1	4	0	0
					Total					
Bait	0	0	10	10	2	2	9	9	0	0
Fly	30	31	26	27	0	0	6	6	0	0
Lure	2	2	6	6	0	0	6	6	0	0

10. I feel stocked trout are as enjoyable to catch as wild trout.

	Strongly disagree		Disagree		Undecided		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 1					
Bait	1	11	1	11	0	0	4	44	0	0
Fly	0	0	0	0	0	0	1	11	0	0
Lure	1	1	1	1	1	1	2	22	0	0
					Section 2					
Bait	0	0	1	14	0	14	0	14	0	0
Fly	0	0	3	43	0	0	0	0	0	0
Lure	0	0	0	0	0	0	1	14	0	0
					Section 3					
Bait	0	0	1	5	2	9	2	9	1	5
Fly	4	18	2	9	3	14	2	9	0	0
Lure	0	0	2	9	0	0	3	14	0	0
					Section 4					
Bait	0	0	4	11	1	3	0	0	0	0
Fly	2	6	8	23	6	17	6	17	3	9
Lure	0	0	2	6	1	3	1	3	1	3
					Section 5					
Bait	0	0	1	4	0	0	0	0	0	0
Fly	5	21	5	21	4	17	4	17	4	17
Lure	0	0	0	0	0	0	1	4	0	0
					Total					
Bait	1	1	8	8	3	3	7	7	1	1
Fly	11	12	18	19	13	14	13	14	7	7
Lure	0	0	4	4	1	1	8	8	0	0

Appendix F. Continued.

11. Fishing in stocked waters gives me a greater chance of catching trout.

	Strongly disagree		Disagree		Undecided		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 1					
Bait	0	0	0	0	1	11	5	56	0	0
Fly	0	0	0	0	0	0	1	11	0	0
Lure	0	0	1	11	0	0	0	0	1	11
					Section 2					
Bait	0	0	0	0	1	14	1	14	1	14
Fly	0	0	2	29	0	0	1	14	0	0
Lure	0	0	0	0	0	0	1	14	0	0
					Section 3					
Bait	0	0	0	0	0	0	4	18	2	9
Fly	1	5	2	9	1	5	4	18	3	14
Lure	0	0	0	0	1	5	3	14	1	5
					Section 4					
Bait	0	0	1	3	1	3	3	9	0	0
Fly	1	3	4	11	2	6	15	43	3	9
Lure	0	0	0	0	0	0	5	14	0	0
					Section 5					
Bait	0	0	0	0	1	4	0	0	0	0
Fly	2	8	3	13	5	21	8	33	4	17
Lure	0	0	0	0	0	0	1	4	0	0
					Total					
Bait	0	0	1	1	4	4	13	13	3	3
Fly	4	4	11	11	8	8	29	30	10	10
Lure	0	0	1	1	1	1	10	10	2	2

12. I try to fish streams shortly after they are stocked with trout.

	Strongly disagree		Disagree		Undecided		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 1					
Bait	0	0	4	44	1	11	1	11	0	0
Fly	0	0	2	22	0	0	1	11	0	0
Lure	1	11	1	11	0	0	0	0	0	0
					Section 2					
Bait	0	0	2	29	0	0	1	14	0	0
Fly	0	0	3	43	0	0	0	0	0	0
Lure	0	0	0	0	0	0	1	14	0	0

Appendix F. Continued.

	Strongly disagree		Disagree		Undecided		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 3					
Bait	0	0	4	18	2	9	0	0	0	0
Fly	5	23	5	23	1	5	0	0	0	0
Lure	0	0	3	14	1	5	0	0	1	5
					Section 4					
Bait	1	3	3	9	0	0	1	3	0	0
Fly	5	14	15	43	4	11	1	3	0	0
Lure	1	3	2	6	2	6	0	0	0	0
					Section 5					
Bait	1	4	0	0	0	0	0	0	0	0
Fly	11	46	6	25	4	17	1	4	0	0
Lure	0	0	1	4	0	0	0	0	0	0
					Total					
Bait	2	2	13	13	3	3	3	3	0	0
Fly	21	22	30	31	9	9	2	2	0	0
Lure	2	2	7	7	3	3	1	1	1	1

13. Stocking is important to maintain good trout fishing.

	Strongly disagree		Disagree		Undecided		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 1					
Bait	0	0	0	0	1	11	4	44	1	11
Fly	0	0	0	0	1	11	0	0	0	0
Lure	0	0	1	11	0	0	0	0	1	11
					Section 2					
Bait	0	0	0	0	1	14	1	14	1	14
Fly	1	14	0	0	0	0	2	29	0	0
Lure	0	0	0	0	0	0	1	14	0	0
					Section 3					
Bait	0	0	0	0	1	5	2	9	3	14
Fly	2	9	2	9	2	9	3	14	2	9
Lure	0	0	1	5	2	9	1	5	1	5
					Section 4					
Bait	0	0	1	3	1	3	3	9	0	0
Fly	1	3	3	9	6	17	14	40	1	3
Lure	0	0	1	3	1	3	2	6	1	3

Appendix F. Continued.

	Strongly disagree		Disagree		Undecided		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 5					
Bait	0	0	0	0	1	4	0	0	0	0
Fly	5	21	3	13	8	33	4	17	2	8
Lure	0	0	0	0	0	0	1	4	0	0
					Total					
Bait	0	0	3	3	5	5	10	10	5	5
Fly	9	9	8	8	17	17	23	23	5	5
Lure	0	0	3	3	3	3	5	5	3	3

14. How would you compare the number of trout you catch to that of other anglers? (Please check one).

	Much less		Less		Same		More		Much more	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 1					
Bait	0	0	1	11	4	44	1	11	0	0
Fly	0	0	0	0	1	11	0	0	0	0
Lure	0	0	1	11	1	11	0	0	0	0
					Section 2					
Bait	0	0	2	29	0	0	1	14	0	0
Fly	0	0	0	0	1	14	1	14	1	14
Lure	0	0	0	0	1	14	0	0	0	0
					Section 3					
Bait	1	5	2	9	2	9	0	0	1	5
Fly	1	5	1	5	5	23	3	14	1	5
Lure	0	0	1	5	3	14	1	5	0	0
					Section 4					
Bait	0	0	1	3	2	6	2	6	0	0
Fly	1	3	4	12	6	18	10	30	2	6
Lure	0	0	1	3	3	9	1	3	0	0
					Section 5					
Bait	0	0	0	0	1	4	0	0	0	0
Fly	0	0	6	25	6	25	10	42	0	0
Lure	0	0	0	0	0	0	1	4	0	0
					Total					
Bait	1	1	6	6	9	9	4	4	1	1
Fly	2	2	11	12	19	20	24	25	4	4
Lure	0	0	3	3	8	8	3	3	0	0

Appendix F. Continued.

15. Do you belong to a local sportsman club (ie. rod and gun club or fishing club).

	Yes		No	
	No.	%	No.	%
	Section 1			
Bait	0	0	6	67
Fly	0	0	1	11
Lure	1	11	1	11
	Section 2			
Bait	0	0	3	43
Fly	0	0	3	43
Lure	0	0	1	14
	Section 3			
Bait	0	0	6	27
Fly	1	5	10	45
Lure	0	0	5	23
	Section 4			
Bait	0	0	5	14
Fly	0	0	25	71
Lure	0	0	5	14
	Section 5			
Bait	1	4	0	0
Fly	5	21	17	71
Lure	0	0	1	4
	Total			
Bait	2	2	20	21
Fly	5	5	56	58
Lure	0	0	13	14

16. Do you belong to a National sportsman group?

	Yes		No	
	No.	%	No.	%
	Section 1			
Bait	0	0	0	0
Fly	0	0	0	0
Lure	0	0	0	0
	Section 2			
Bait	0	0	3	43
Fly	0	0	3	43
Lure	0	0	1	14

Appendix F. Continued.

	Yes		No	
	No.	%	No.	%
	Section 3			
Bait	0	0	6	27
Fly	1	5	10	45
Lure	1	5	4	18
	Section 4			
Bait	0	0	5	14
Fly	1	3	24	69
Lure	0	0	5	14
	Section 5			
Bait	0	0	1	4
Fly	5	21	17	71
Lure	1	4	0	0
	Total			
Bait	0	0	15	17
Fly	7	7	54	61
Lure	2	2	10	11

SECTION 3. These questions pertain to the section of the North Fork Coeur d'Alene River ***downstream of Yellow Dog Creek.*** Please answer the following questions ***even if you do not fish*** the section from Yellow Dog Creek downstream.

1. Do you fish the section of the North Fork Coeur d'Alene River **downstream from Yellow Dog Creek**?

	Yes		No		Do not know	
	No.	%	No.	%	No.	%
	Section 1					
Bait	4	44	0	0	2	22
Fly	1	11	0	0	0	0
Lure	1	11	1	11	0	0
	Section 2					
Bait	3	43	0	0	0	0
Fly	3	43	0	0	0	0
Lure	1	14	0	0	0	0
	Section 3					
Bait	5	21	0	0	1	5
Fly	10	45	0	0	1	5
Lure	4	18	1	5	0	0

Appendix F. Continued.

	Yes		No		Do not know	
	No.	%	No.	%	No.	%
			Section 4			
Bait	5	14	0	0	0	0
Fly	23	66	2	6	0	0
Lure	4	14	0	0	0	0
			Section 5			
Bait	1	4	0	0	0	0
Fly	8	35	13	57	0	0
Lure	1	4	0	0	0	0
			Total			
Bait	18	19	0	0	3	3
Fly	45	47	15	16	1	1
Lure	12	13	2	2	0	0

2. In general, I feel fishing regulations for **this section** of the North Fork Coeur d'Alene River allow me to keep enough fish. (Please select the one that best describes your feelings).

	Strongly disagree		Disagree		Undecided		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 1					
Bait	0	0	1	11	2	22	3	33	0	0
Fly	0	0	0	0	1	11	0	0	0	0
Lure	0	0	0	0	0	0	2	22	0	0
					Section 2					
Bait	0	0	1	14	0	0	1	14	1	14
Fly	1	14	0	0	0	0	2	29	0	0
Lure	0	0	0	0	0	0	1	14	0	0
					Section 3					
Bait	1	5	3	14	0	0	2	9	0	0
Fly	1	5	1	5	1	5	6	27	2	9
Lure	1	5	0	0	2	9	2	9	0	0
					Section 4					
Bait	0	0	3	9	1	3	0	0	1	3
Fly	2	6	5	14	4	11	7	20	7	20
Lure	0	0	0	0	0	0	4	11	1	3
					Section 5					
Bait	0	0	0	0	0	0	1	4	0	0
Fly	2	9	0	0	6	27	10	45	2	9
Lure	0	0	1	4	0	0	0	0	0	0

Appendix F. Continued.

	Strongly disagree		Disagree		Undecided		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Total					
Bait	1	1	8	8	3	3	7	7	2	2
Fly	6	6	6	6	12	13	25	26	11	12
Lure	1	1	1	1	2	2	9	9	1	1

3. If the number of hatchery trout stocked **in this section** was **decreased,** my fishing effort **on the this section** of the river would (Please select the one that best describes your feelings).

	Stop fishing		Decrease considerably		Decrease some		Same		Increase some		Increase considerably	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 1							
Bait	0	0	2	25	2	25	1	13	0	0	0	0
Fly	0	0	0	0	1	13	0	0	0	0	0	0
Lure	0	0	0	0	0	0	2	25	0	0	0	0
					Section 2							
Bait	0	0	1	14	0	0	2	29	0	0	0	0
Fly	0	0	0	0	0	0	3	43	0	0	0	0
Lure	0	0	1	14	0	0	0	0	0	0	0	0
					Section 3							
Bait	0	0	0	0	3	14	3	14	0	0	0	0
Fly	2	9	1	5	2	9	5	23	1	5	0	0
Lure	0	0	0	0	1	5	4	18	0	0	0	0
					Section 4							
Bait	0	0	0	0	0	0	5	14	0	0	0	0
Fly	0	0	2	6	4	11	18	51	1	3	0	0
Lure	0	0	0	0	1	3	4	11	0	0	0	0
					Section 5							
Bait	0	0	0	0	1	5	0	0	0	0	0	0
Fly	0	0	1	5	2	9	13	59	3	14	1	5
Lure	0	0	0	0	1	5	0	0	0	0	0	0
					Total							
Bait	0	0	3	3	6	6	11	12	0	0	0	0
Fly	2	2	4	4	9	10	39	41	5	5	1	1
Lure	0	0	1	1	3	3	10	11	0	0	0	0

Appendix F. Continued.

4. If hatchery stocking were stopped in this section, how would this change affect your fishing activity on **this section** of the North Fork Coeur d'Alene River. (Please select the one that best describes your feelings).

	Stop fishing		Decrease fishing		Same		Increase fishing		Begin fishing	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 1					
Bait	1	11	3	33	2	22	0	0	0	0
Fly	0	0	0	0	1	11	0	0	0	0
Lure	0	0	0	0	2	22	0	0	0	0
					Section 2					
Bait	0	0	1	14	1	14	1	14	0	0
Fly	0	0	0	0	3	43	0	0	0	0
Lure	1	14	0	0	0	0	0	0	0	0
					Section 3					
Bait	0	0	3	14	3	14	0	0	0	0
Fly	1	5	3	14	6	27	0	0	1	5
Lure	0	0	1	5	4	18	0	0	0	0
					Section 4					
Bait	0	0	1	3	4	11	0	0	0	0
Fly	0	0	7	20	17	49	1	3	0	0
Lure	0	0	0	0	5	14	0	0	0	0
					Section 5					
Bait	0	0	0	0	1	4	0	0	0	0
Fly	0	0	1	4	12	55	6	27	1	4
Lure	0	0	1	4	0	0	0	0	0	0
					Total					
Bait	1	1	8	8	11	12	1	1	0	0
Fly	1	1	11	12	39	41	7	7	2	2
Lure	1	1	2	2	11	12	0	0	0	0

5. Due to the cost of raising hatchery trout ($.60 each to rear and stock), the Department tries to stock trout only where at least 40% of the fish stocked are caught (this costs $1.50 per fish caught). I would support eliminating stocking in the North Fork Coeur d'Alene River where less than 40% of the fish stocked were caught.

	Yes		No	
	No.	%	No.	%
	Section 1			
Bait	4	44	2	22
Fly	0	0	1	11
Lure	1	11	1	11

Appendix F. Continued.

	Yes		No	
	No.	%	No.	%
	Section 2			
Bait	1	14	2	29
Fly	2	29	1	14
Lure	1	14	0	0
	Section 3			
Bait	1	5	5	23
Fly	5	23	6	27
Lure	2	9	3	14
	Section 4			
Bait	2	6	3	9
Fly	12	35	12	35
Lure	3	9	2	6
	Section 5			
Bait	1	4	0	0
Fly	13	59	7	32
Lure	0	0	1	4
	Total			
Bait	9	10	12	13
Fly	32	34	27	29
Lure	7	7	7	7

6. I would support the elimination of stocking hatchery trout in the section of North Fork Coeur d'Alene River ***from Yellow Dog Creek downstream***, if ponds were constructed along the river and stocked with hatchery trout I could keep.

	Yes		No	
	No.	%	No.	%
	Section 1			
Bait	3	33	3	33
Fly	1	11	0	0
Lure	1	11	1	11
	Section 2			
Bait	2	29	1	14
Fly	1	14	2	29
Lure	0	0	1	14
	Section 3			
Bait	0	0	5	24
Fly	3	14	8	38
Lure	1	5	4	19

Appendix F. Continued.

	Yes		No	
	No.	%	No.	%
	Section 4			
Bait	0	0	5	15
Fly	3	9	22	67
Lure	1	3	2	6
	Section 5			
Bait	0	0	1	5
Fly	5	23	15	58
Lure	0	0	1	5
	Total			
Bait	5	5	15	16
Fly	13	14	47	51
Lure	3	3	9	10

7. If opportunity to keep fish was eliminated on the section of the North Fork Coeur d'Alene River ***from Yellow Dog Creek downstream to Lost Creek***, how would this change affect your fishing activity in this section? (Please select the one that best describes your feelings).

	Begin fishing		Increase fishing		Same		Decrease fishing		Stop fishing	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 1					
Bait	0	0	0	0	4	44	0	0	2	22
Fly	0	0	1	11	0	0	0	0	0	0
Lure	0	0	0	0	2	22	0	0	0	0
					Section 2					
Bait	0	0	0	0	0	0	3	43	0	0
Fly	0	0	1	14	2	29	0	0	0	0
Lure	0	0	0	0	0	0	1	14	0	0
					Section 3					
Bait	1	5	0	0	1	5	1	5	3	14
Fly	0	0	1	5	3	14	4	18	3	14
Lure	0	0	0	0	1	5	0	0	4	18
					Section 4					
Bait	0	0	0	0	1	3	3	9	1	3
Fly	1	3	6	17	10	29	4	11	4	11
Lure	0	0	0	0	4	11	1	3	0	0
					Section 5					
Bait	0	0	0	0	0	0	0	0	1	4
Fly	7	29	7	29	8	33	0	0	0	0
Lure	0	0	0	0	0	0	1	4	0	0

Appendix F. Continued.

	Begin fishing		Increase fishing		Same		Decrease fishing		Stop fishing	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Total					
Bait	1	1	0	0	6	7	7	8	7	8
Fly	8	9	16	17	18	20	8	9	7	8
Lure	0	0	0	0	7	8	3	3	4	4

8. If it were unlawful to use bait in the North Fork Coeur d'Alene River ***from Yellow Dog Creek downstream to Lost Creek***, my fishing effort **on this section** would. (Please select the one that best describes your feelings).

	Stop fishing		Decrease considerably		Decrease some		Same		Increase some		Increase considerably	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
						Section 1						
Bait	1	11	1	11	3	33	1	11	0	0	0	0
Fly	0	0	0	0	0	0	1	11	0	0	0	0
Lure	0	0	0	0	0	0	2	22	0	0	0	0
						Section 2						
Bait	0	0	3	43	0	0	0	0	0	0	0	0
Fly	0	0	0	0	1	14	2	29	0	0	0	0
Lure	0	0	1	14	0	0	0	0	0	0	0	0
						Section 3						
Bait	1	5	2	10	1	5	1	5	0	0	0	0
Fly	0	0	1	5	2	10	4	19	3	14	1	5
Lure	1	5	0	0	0	0	3	14	0	0	1	5
						Section 4						
Bait	2	6	1	3	2	6	0	0	0	0	0	0
Fly	0	0	2	6	1	3	15	43	3	9	4	11
Lure	0	0	0	0	1	3	4	11	0	0	0	0
						Section 5						
Bait	0	0	0	0	1	5	0	0	0	0	0	0
Fly	0	0	0	0	0	0	7	33	7	33	7	33
Lure	0	0	0	0	1	5	0	0	0	0	0	0
						Total						
Bait	4	4	7	7	7	7	4	4	0	0	0	0
Fly	0	0	3	3	4	4	29	30	13	13	12	12
Lure	1	1	1	1	2	2	9	9	0	0	1	1

SECTION 4. This section pertains **only to the tributaries** of the North Fork Coeur d'Alene River from ***Yellow Dog Creek downstream.***

Appendix F. Continued.

1. Do you fish in the tributaries to the North Fork Coeur d'Alene River downstream of Yellow Dog Creek?

	Yes		No	
	No.	%	No.	%
	Section 1			
Bait	3	33	3	33
Fly	0	0	1	11
Lure	1	11	1	11
	Section 2			
Bait	3	43	0	0
Fly	2	29	1	14
Lure	0	0	1	14
	Section 3			
Bait	2	10	3	14
Fly	7	33	4	19
Lure	2	10	3	14
	Section 4			
Bait	2	6	3	9
Fly	12	34	13	37
Lure	4	11	1	3
	Section 5			
Bait	1	4	0	0
Fly	5	21	17	71
Lure	0	0	1	4
	Total			
Bait	11	11	9	9
Fly	26	27	36	38
Lure	7	7	7	7

2. In the last 12 months, how many days have you fished in the tributaries to the North Fork Coeur d'Alene River downstream of Yellow Dog Creek? (Please check one).

	1-5		6-10		11-15		16-20		21-25		>25		None	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
							Section 1							
Bait	0	0	2	11	1	11	0	0	0	0	0	0	3	33
Fly	0	0	0	0	0	0	0	0	0	0	0	0	1	11
Lure	2	22	0	0	0	0	0	0	0	0	0	0	0	0
							Section 2							
Bait	0	0	2	29	1	14	0	0	0	0	0	0	0	0
Fly	1	14	0	0	0	0	0	0	0	0	1	14	1	14
Lure	0	0	0	0	0	0	0	0	0	0	0	0	1	14

Appendix F. Continued.

	1-5		6-10		11-15		16-20		21-25		>25		None	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
							Section 3							
Bait	1	5	1	5	0	0	0	0	0	0	0	0	1	5
Fly	7	37	1	5	0	0	0	0	0	0	0	0	3	16
Lure	2	11	0	0	0	0	0	0	0	0	1	5	2	11
							Section 4							
Bait	0	0	1	3	0	0	0	0	0	0	0	0	4	11
Fly	7	20	2	6	2	6	2	6	0	0	0	0	12	34
Lure	1	3	0	0	0	0	0	0	0	0	1	3	3	9
							Section 5							
Bait	1	5	0	0	0	0	0	0	0	0	0	0	0	0
Fly	4	18	0	0	0	0	0	0	1	4	0	0	15	68
Lure	1	4	0	0	0	0	0	0	0	0	0	0	0	0
							Total							
Bait	2	2	6	7	2	2	0	0	0	0	0	0	8	9
Fly	19	21	3	3	2	2	2	2	1	1	1	1	32	35
Lure	6	7	0	0	0	0	0	0	0	0	2	2	6	7

3. In general, I feel that fishing regulations on the tributaries in **this section** of the North Fork Coeur d'Alene River allow me to keep enough fish (current limit for trout is six fish). (Please select the one that best describes your feelings).

	Strongly disagree		Disagree		Undecided		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 1					
Bait	0	0	0	0	5	56	1	11	0	0
Fly	0	0	0	0	1	11	0	0	0	0
Lure	0	0	0	0	1	11	1	11	0	0
					Section 2					
Bait	0	0	0	0	0	0	3	43	0	0
Fly	0	0	0	0	1	14	2	29	0	0
Lure	0	0	0	0	0	0	1	14	0	0
					Section 3					
Bait	0	0	0	0	1	5	2	10	0	0
Fly	1	5	0	0	2	10	6	32	2	10
Lure	0	0	1	5	2	10	2	10	0	0
					Section 4					
Bait	0	0	1	3	2	6	2	6	0	0
Fly	1	3	0	0	10	29	9	26	5	14
Lure	0	0	0	0	1	3	3	9	1	3

Appendix F. Continued.

	Strongly disagree		Disagree		Undecided		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 5					
Bait	0	0	0	0	0	0	0	0	1	5
Fly	2	10	0	0	6	29	4	19	7	33
Lure	0	0	0	0	0	0	1	5	0	0
					Total					
Bait	0	0	1	1	8	9	8	9	1	1
Fly	4	4	0	0	20	22	21	23	14	15
Lure	0	0	1	1	4	4	8	9	1	1

4. If the bag limit was reduced on the tributaries, how would this change affect your fishing activity in these streams? (Please select the one that best describes your feelings).

	Stop fishing		Decrease fishing		Same		Increase fishing		Begin fishing	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 1					
Bait	0	0	1	13	4	50	0	0	0	0
Fly	0	0	0	0	1	13	0	0	0	0
Lure	0	0	0	0	2	25	0	0	0	0
					Section 2					
Bait	1	14	2	29	0	0	0	0	0	0
Fly	0	0	0	0	2	29	1	14	0	0
Lure	0	0	0	0	1	14	0	0	0	0
					Section 3					
Bait	0	0	0	0	3	16	0	0	0	0
Fly	2	11	2	11	6	32	1	5	0	0
Lure	0	0	1	5	4	21	0	0	0	0
					Section 4					
Bait	0	0	0	0	5	14	0	0	0	0
Fly	0	0	4	11	17	49	2	6	2	6
Lure	0	0	0	0	5	14	0	0	0	0
					Section 5					
Bait	0	0	0	0	1	5	0	0	0	0
Fly	0	0	0	0	14	67	1	5	4	19
Lure	0	0	1	5	0	0	0	0	0	0
					Total					
Bait	1	1	3	3	13	14	0	0	0	0
Fly	2	2	6	7	40	44	5	6	6	7
Lure	0	0	2	2	12	13	0	0	0	0

Appendix F. Continued.

5. It is important to me to have uniform regulations on the tributaries and the mainstem knowing that harvest may be reduced.

	Strongly disagree		Disagree		Undecided		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 1					
Bait	0	0	0	0	3	33	3	33	0	0
Fly	0	0	0	0	0	0	1	11	0	0
Lure	0	0	0	0	1	11	1	11	0	0
					Section 2					
Bait	1	14	0	0	0	0	2	29	0	0
Fly	0	0	0	0	2	29	1	14	0	0
Lure	0	0	0	0	0	0	1	14	0	0
					Section 3					
Bait	0	0	1	5	1	5	1	5	1	5
Fly	2	11	2	11	3	16	1	5	2	11
Lure	0	0	1	5	2	11	2	11	0	0
					Section 4					
Bait	0	0	0	0	1	3	4	12	0	0
Fly	0	0	4	12	9	27	6	18	4	12
Lure	0	0	0	0	1	3	4	12	0	0
					Section 5					
Bait	0	0	0	0	1	5	0	0	0	0
Fly	1	5	3	14	3	14	6	29	6	29
Lure	0	0	1	5	0	0	0	0	0	0
					Total					
Bait	1	1	1	1	6	7	10	11	1	1
Fly	3	3	9	10	17	19	15	17	12	13
Lure	0	0	3	3	4	4	7	8	0	0

6. It is important to me to have the opportunity to harvest a limit of fish in the tributaries knowing that fishing regulations would be more complicated.

	Strongly disagree		Disagree		Undecided		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 1					
Bait	0	0	2	22	2	22	2	22	0	0
Fly	0	0	0	0	1	11	0	0	0	0
Lure	1	11	1	11	0	0	0	0	0	0

Appendix F. Continued.

	Strongly disagree		Disagree		Undecided		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 2					
Bait	0	0	0	0	0	0	2	29	1	14
Fly	1	14	2	29	0	0	0	0	0	0
Lure	0	0	1	14	0	0	0	0	0	0
					Section 3					
Bait	0	0	1	5	0	0	1	5	2	11
Fly	2	11	4	21	3	16	1	5	0	0
Lure	0	0	2	11	1	5	2	11	0	0
					Section 4					
Bait	0	0	3	9	1	3	1	3	0	0
Fly	4	12	10	30	8	24	1	3	0	0
Lure	1	3	3	9	1	3	0	0	0	0
					Section 5					
Bait	0	0	1	5	0	0	0	0	0	0
Fly	10	48	3	14	6	29	0	0	0	0
Lure	0	0	1	5	0	0	0	0	0	0
					Total					
Bait	0	0	7	8	3	3	6	7	3	3
Fly	17	19	19	21	18	20	2	2	0	0
Lure	2	2	8	9	2	2	2	2	0	0

SECTION 5. These questions pertain to **guided fishing trips** on the North Fork Coeur d'Alene River. (Please circle the number that best describes your feelings).

1. Commercially **guided walk and wade** fishing trips are appropriate on the North Fork Coeur d'Alene River.

	Strongly disagree		Disagree		Undecided		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 1					
Bait	2	22	1	11	2	22	1	11	0	0
Fly	0	0	1	11	0	0	0	0	0	0
Lure	1	11	0	0	1	11	0	0	0	0
					Section 2					
Bait	1	17	1	17	0	0	0	0	0	0
Fly	1	17	0	0	1	17	1	17	0	0
Lure	0	0	1	17	0	0	0	0	0	0

Appendix F. Continued.

	Strongly disagree		Disagree		Undecided		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 3					
Bait	4	20	1	5	0	0	1	5	0	0
Fly	5	25	1	5	2	10	1	5	0	0
Lure	1	5	1	5	2	10	1	5	0	0
					Section 4					
Bait	1	3	4	13	0	0	0	0	0	0
Fly	7	23	5	16	5	16	4	13	1	3
Lure	1	3	1	3	2	6	0	0	0	0
					Section 5					
Bait	0	0	0	0	4	0	0	0	0	0
Fly	5	21	4	17	4	17	6	25	3	13
Lure	0	0	1	4	0	0	0	0	0	0
					Total					
Bait	8	9	7	8	3	3	2	2	0	0
Fly	18	20	11	12	12	13	12	13	4	4
Lure	3	3	4	4	5	6	1	1	0	0

2. Commercially **guided float boat** fishing trips are appropriate on the North Fork Coeur d'Alene River.

	Strongly disagree		Disagree		Undecided		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 1					
Bait	2	22	2	22	2	22	0	0	0	0
Fly	0	0	1	11	0	0	0	0	0	0
Lure	1	11	0	0	1	11	0	0	0	0
					Section 2					
Bait	2	33	0	0	0	0	0	0	0	0
Fly	1	17	1	17	0	0	1	17	0	0
Lure	0	0	1	17	0	0	0	0	0	0
					Section 3					
Bait	4	20	1	5	0	0	1	5	0	0
Fly	3	15	1	5	3	15	2	10	0	0
Lure	1	5	2	10	2	10	0	0	0	0
					Section 4					
Bait	2	6	3	10	0	0	0	0	0	0
Fly	9	29	5	16	5	16	3	10	0	0
Lure	1	3	1	3	2	6	0	0	0	0

Appendix F. Continued.

	Strongly disagree		Disagree		Undecided		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 5					
Bait	1	4	0	0	0	0	0	0	0	0
Fly	9	38	5	21	3	13	3	13	2	8
Lure	0	0	1	4	0	0	0	0	0	0
					Total					
Bait	11	12	6	7	2	2	1	1	0	0
Fly	22	24	13	14	11	12	9	10	2	2
Lure	3	3	5	5	6	7	0	0	0	0

3. The number of guided fishing trips on the North Fork Coeur d'Alene River is (too low___, just right___, too high___, don't know ___).

	Too low		Just right		Too high		Do not know	
	No.	%	No.	%	No.	%	No.	%
				Section 1				
Bait	0	0	1	11	0	0	5	56
Fly	0	0	0	0	0	0	1	11
Lure	0	0	0	0	0	0	2	22
				Section 2				
Bait	0	0	1	14	0	0	2	29
Fly	0	0	0	0	1	14	2	29
Lure	0	0	0	0	0	0	1	14
				Section 3				
Bait	0	0	1	5	1	5	4	21
Fly	0	0	1	5	2	11	6	32
Lure	0	0	0	0	1	5	3	16
				Section 4				
Bait	0	0	1	3	0	0	4	12
Fly	0	0	2	6	2	6	19	58
Lure	0	0	0	0	1	5	4	21
				Section 5				
Bait	1	4	0	0	0	0	0	0
Fly	2	8	2	8	5	21	13	54
Lure	0	0	0	0	1	4	0	0
				Total				
Bait	1	1	4	4	1	1	15	16
Fly	2	2	5	5	10	11	41	45
Lure	0	0	0	0	3	3	10	11

Appendix F. Continued.

SECTION 6. The following questions pertain to your overall knowledge of the Department of Fish and Game.

1. How well does the Department manage the supply of game fish for fishing in the North Fork Coeur d'Alene River?

	Poor		Fair		Good		Excellent		Do not know	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 1					
Bait	0	0	0	0	4	44	0	0	2	22
Fly	0	0	1	11	0	0	0	0	0	0
Lure	0	0	1	11	1	11	0	0	0	0
					Section 2					
Bait	0	0	1	14	1	14	0	0	1	14
Fly	0	0	1	14	1	14	0	0	1	14
Lure	0	0	0	0	0	0	0	0	1	14
					Section 3					
Bait	0	0	3	14	1	5	1	5	1	5
Fly	0	0	4	19	3	14	1	5	2	10
Lure	0	0	0	0	2	10	1	5	2	10
					Section 4					
Bait	0	0	0	0	4	11	0	0	1	3
Fly	1	3	7	20	4	11	3	9	10	29
Lure	1	3	0	0	2	6	1	3	1	3
					Section 5					
Bait	0	0	0	0	1	4	0	0	0	0
Fly	0	0	6	25	8	33	2	8	6	25
Lure	0	0	1	4	0	0	0	0	0	0
					Total					
Bait	0	0	4	4	11	11	1	1	5	5
Fly	1	1	19	20	16	17	6	6	19	20
Lure	1	1	2	2	5	5	2	2	4	4

2. How well does the Department manage and protect the fish resources in the North Fork Coeur d'Alene River?

	Poor		Fair		Good		Excellent		Do not know	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 1					
Bait	0	0	1	11	2	22	1	11	2	22
Fly	0	0	0	0	1	11	0	0	0	0
Lure	0	0	1	11	1	11	0	0	0	0

Appendix F. Continued.

	Poor		Fair		Good		Excellent		Do not know	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 2					
Bait	0	0	0	0	2	29	0	0	1	14
Fly	1	14	0	0	1	14	0	0	1	14
Lure	0	0	0	0	0	0	0	0	1	14
					Section 3					
Bait	0	0	0	0	4	19	1	5	1	5
Fly	1	5	2	10	3	14	2	10	2	10
Lure	0	0	0	0	3	14	1	5	1	5
					Section 4					
Bait	0	0	0	0	2	6	2	6	1	3
Fly	4	12	2	6	7	21	4	12	7	21
Lure	1	3	0	0	1	3	2	6	1	3
					Section 5					
Bait	0	0	1	4	0	0	0	0	0	0
Fly	1	4	5	21	9	38	3	13	4	17
Lure	0	0	1	4	0	0	0	0	0	0
					Total					
Bait	0	0	2	2	10	11	4	4	5	5
Fly	7	7	9	9	21	22	9	9	14	15
Lure	1	1	2	2	5	5	3	3	3	3

3. How well does the Department manage and protect fish habitat in the North Fork Coeur d'Alene River?

	Poor		Fair		Good		Excellent		Do not know	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 1					
Bait	0	0	0	0	4	44	0	0	2	22
Fly	0	0	0	0	1	11	0	0	0	0
Lure	1	11	0	0	1	11	0	0	0	0
					Section 2					
Bait	1	14	0	0	1	14	0	0	1	14
Fly	1	14	0	0	1	14	0	0	1	14
Lure	0	0	0	0	0	0	0	0	1	14
					Section 3					
Bait	0	0	1	5	3	14	1	5	1	5
Fly	1	5	1	5	5	24	2	10	1	5
Lure	0	0	2	10	1	5	1	5	1	5

Appendix F. Continued.

	Poor		Fair		Good		Excellent		Do not know	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 4					
Bait	0	0	0	0	2	6	2	6	1	3
Fly	5	15	3	9	5	15	2	6	9	26
Lure	1	3	0	0	2	6	1	3	1	3
					Section 5					
Bait	0	0	1	4	0	0	0	0	0	0
Fly	1	4	8	33	7	29	2	8	4	17
Lure	0	0	0	0	1	4	0	0	0	0
					Total					
Bait	1	1	2	2	10	11	3	3	5	5
Fly	8	8	12	13	19	20	6	6	15	16
Lure	2	2	2	2	5	5	2	2	3	3

4. How well has the Department incorporated sportsmen's wants and needs into management of the North Fork Coeur d'Alene River?

	Poor		Fair		Good		Excellent		Do not know	
	No.	%	No.	%	No.	%	No.	%	No.	%
					Section 1					
Bait	0	0	1	11	2	22	1	11	2	22
Fly	0	0	0	0	1	11	0	0	0	0
Lure	1	11	0	0	1	11	0	0	0	0
					Section 2					
Bait	0	0	0	0	2	29	0	0	1	14
Fly	0	0	0	0	2	29	0	0	1	14
Lure	0	0	0	0	0	0	0	0	1	14
					Section 3					
Bait	0	0	0	0	3	14	0	0	3	14
Fly	0	0	2	10	4	19	2	10	2	10
Lure	0	0	1	5	2	10	1	5	1	5
					Section 4					
Bait	0	0	0	0	3	9	1	3	1	3
Fly	4	11	4	11	3	9	3	9	11	31
Lure	1	3	1	3	0	0	1	3	2	6
					Section 5					
Bait	0	0	1	4	0	0	0	0	0	0
Fly	1	4	7	29	6	25	3	13	5	21
Lure	1	4	0	0	0	0	0	0	0	0
					Total					
Bait	0	0	2	2	10	10	2	2	7	7
Fly	5	5	13	14	16	17	8	8	19	20
Lure	3	3	2	2	3	3	2	2	4	4

Appendix F. Continued.

SECTION 7. The following questions are optional, but will help us better understand the anglers who fish the North Fork Coeur d'Alene River drainage.

1. What is your gender?

	Male	Female
Bait	26	1
Fly	62	3
Lure	17	1

2. What is your marital status?

	Married	Single
Bait	17	10
Fly	45	20
Lure	16	2

3. Do you have any children living at home?

	Yes	No
Bait	14	13
Fly	19	43
Lure	11	7

4. Please select the response that best describes the area where you live. (Please check one).

	Bait	Fly	Lure
Rural area	4	6	3
Small town (<4,999)	6	19	5
Small city (5,000-49,999)	12	21	7
Large city (50,000-500,000)	7	2	3
Suburb	2	3	2
Very large city (>500,000)	1	1	0

5. What is the highest level of education you have completed? (Please check one).

Education	Bait	Fly	Lure
Some high school	1	3	1
High school graduate	3	4	5
Trade or technical school	7	2	3
Some college	10	25	7
College graduate	3	18	1
Post graduate degree	3	13	1

Appendix F. Continued.

6. Which category best describes your occupation. (Please check one).

Occupation	Bait	Fly	Lure
Professional/technical	5	19	1
Skilled worker	11	14	2
Skilled operator	4	5	6
Unskilled laborer	--	1	--
Clerical/sales	--	2	1
Logger	--	--	1
Miner	--	--	--
Appendix F. Continued.			
Service worker	--	1	--
Farmer	--	--	--
Student	--	1	--
Retired	1	9	2
Housewife	--	--	--
Self-employed	2	7	4
Other	4	5	--

7. Please give your age. _________ Years

	Number of anglers	Range	Mean	Median
Bait	28	0-69	38	38
Fly	66	0-80	41	39
Lure	18	21-45	39	36

Thank you for your time and assistance in completing this questionnaire. Your assistance will help expand our understanding of the men and women involved with the fishing in the Spokane drainage.

Appendix G. Summary of snorkeling observations in transects in the North Fork Coeur d'Alene River, Idaho, August 1997.

					Number of Fish Observed						
					Cutthroat		Wild Rainbow		Hatchery Rainbow	White fish[1]	Other[2]
Transect Number	River Section	Length (m)	Width (m)	Area (m2)	≤300 (mm)	>300 (mm)	≤300 (mm)	>300 (mm)			
1	4	--	--	--	--	--	--	--	--	--	--
2	4	137.0	20.6	2822.2	0	0	0	0	0	0	0
3	4	122.0	21.2	2586.4	2	0	0	0	0	0	0
4	4	82.7	19.8	1637.5	3	0	0	0	0	0	0
5	4	130.4	14.2	1851.7	28	7	0	0	0	0	0
6	3	130.4	17.8	1975.8	33	0	0	0	0	25	0
7	3	61.9	15.0	928.5	11	0	0	0	0	0	0
8	3	87.4	24.3	2123.8	8	0	0	0	0	1	0
9	3	85.1	25.2	2144.5	80	5	1	0	0	60	20
10	3	115.0	22.4	2576.0	23	6	0	0	0	55	0
11	2	66.6	41.3	2750.6	1	0	0	0	0	0	0
12	2	120.0	31.2	3744.0	0	1	0	0	0	0	0
13	2	101.8	33.3	3363.3	0	0	0	0	0	0	0
14	2	153.8	26.7	4106.5	77	0	15	0	0	100	0
15	2	108.2	47.8	5172.0	6	0	5	0	0	8	0
16	1	79.0	37.0	2923.0	53	0	14	0	0	0	0
17	1	106.3	47.0	4996.1	31	0	27	0	0	50	0
18	1	110.9	26.2	2905.6	3	1	0	0	0	0	0
19	1	110.0	24.3	2673.0	7	0	22	0	0	30	0
20	1	75.0	38.2	2865.0	6	0	7	0	0	0	0
21	1	109.0	57.5	6267.5	5	0	0	0	1	60	28
22	1	90.5	51.3	4642.7	0	0	0	0	0	1	95
23	1	114.0	28.3	3226.2	0	0	48	0	0	70	0
34	5	48.1	15.8	760.0	13	3	0	0	0	0	0
35	5	56.9	23.0	1308.7	1	0	0	0	0	0	0
36	5	48.3	12.7	613.4	18	4	0	0	0	0	0
37	5	49.9	19.6	978.0	18	1	0	0	0	0	0
38	5	50.3	14.4	724.3	22	1	0	0	1	0	0

[1]Whitefish includes adults and juveniles
[2]Other includes squawfish and suckers

Appendix H. Densities of fish observed while snorkeling in transects in the North Fork Coeur d'Alene River, Idaho, August 1997.

					Density of Fish Observed					
					Cutthroat		Wild rainbow		Hatchery rainbow	
Transect Number	River Section	Length (m)	Width (m)	Area (m2)	No./m^2	No./100m^2	No./m^2	No./100m^2	No./m^2	No./100m^2
1	4	--	--	--	--	--	--	--	--	--
2	4	137.0	20.6	2822.2	0.001	0.08	0	0	0	0
3	4	122.0	21.2	2506.4	0.002	0.18	0	0	0	0
4	4	82.7	19.8	1637.5	0.019	0.89	0	0	0	0
5	4	130.4	14.2	1851.7	0.017	1.67	0	0	0	0
6	3	111.0	17.8	1975.8	0.012	1.18	0	0	0	0
7	3	61.9	15.0	928.5	0.004	0.38	0	0	0	0
8	3	87.4	24.3	2123.8	0.037	3.73	<0.001	0.05	0	0
9	3	85.1	25.2	2144.5	0.009	0.89	0	0	0	0
10	3	115.0	22.4	2576.0	<0.001	0.04	0	0	0	0
11	2	66.6	41.3	2750.6	<0.001	0.03	0	0	0	0
12	2	120.0	31.2	3744.0	0	0	0	0	0	0
13	2	101.0	33.3	3363.3	0.019	1.88	0.004	0.37	0	0
14	2	153.8	26.7	4106.5	0	0	0.002	0.15	0	0
15	2	108.2	47.8	5172.0	0.001	0.14	0.005	0.48	0	0
16	1	79.0	37.0	2923.0	0.018	1.81	0.005	0.54	0	0
17	1	106.3	47.0	4996.1	0.006	0.62	0	0	0	0
18	1	110.9	26.2	2905.6	0.001	0.14	0	0	0	0
19	1	110.0	24.3	2673.0	0.003	0.26	0.008	0.82	0	0
20	1	75.0	38.2	2865.0	0.002	0.21	0.002	0.24	0	0
21	1	109.0	57.5	6267.5	0.001	0.08	0	0	0	0
22	1	90.5	51.3	4642.7	0	0	0	0	0	0
23	1	114.0	28.3	3226.2	0	0	0.015	1.49	<0.001	0.02
34	5	48.1	15.8	760.0	0.02	2.11	0	0	0	0
35	5	56.9	23.0	1308.7	0.001	0.08	0	0	0	0
36	5	48.3	12.7	613.4	0.036	3.59	0	0	0	0
37	5	49.9	19.6	978.0	0.019	1.94	0	0	0	0
38	5	50.3	14.4	724.3	0.032	3.18	0	0	0	0

Appendix I. Number and estimated densities of fish observed in snorkeling transects in the Little North Fork Coeur d'Alene River, Idaho, August 1997.

						Cutthroat		Wild rainbow		Hatchery rainbow	White fish[1]	Other[2]	Cutthroat		Wild rainbow		Hatchery rainbow	
New trans. number	Old trans. number	Riv. Sect.	Lengt h (m)	Widt h (m)	Area (m^2)	<300	>300	<300	>300				No./m^2	No. /100m^2	No./m^2	No. /100m^2	No./m^2	No. /100m^2
1 C&K	33	7	75.0	36.7	2752.5	0	0	0	0	0	0	0	0	0	<0.00	0.04	0	0
2 C&K	32	7	67.3	21.3	1433.5	6	0	6	1	0	0	0	0.004	0.42	0.004	0.49	0	0
3 C&K	31	7	83.8	17.0	1424.6	1	0	9	0	0	0	0	<0.001	0071	0.006	0.63	0	0
4 C&K	30	7	45.0	21.5	967.5	0	0	0	0	6	0	0	0	0	0	0	0.006	0.62
5 C&K	29	7	77.0	24.3	1871.1	0	0	1	0	0	0	0	0	0	<0.00	0.05	0	0
6 C&K	28	7	100.0	20.3	2030.0	21	0	6	0	0	0	0	0.01	1.03	0.003	0.30	0	0
7 C&K	27	7	74.9	16.7	1250.8	0	0	0	0	0	0	0	0	0	0	0	0	0
8 C&K	26	7	60.0	12.0	720.0	0	0	0	0	0	0	0	0	0	0	0	0	0
9 C&R	25	8	47.0	17.7	831.9	0	0	0	0	0	0	0	0	0	0	0	0	0
10 C&R	24	8	91.4	16.8	1535.5	0	0	0	0	0	0	0	0	0	0	0	0	0
11 C&R	101	8	44.0	13.7	602.8	0	0	0	0	0	0	0	0	0	0	0	0	0
12 C&R	102	8	51.0	11.4	581.4	0	0	0	0	0	0	0	0	0	0	0	0	0
13 C&R	104	8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

[1]Whitefish includes adults and juveniles.

[2]Other includes squawfish and suckers.

Appendix J. Summary of snorkeling observations in transects in the St. Joe River, Idaho, August 1997.

					Number of fish observed								
					Cutthroat		Bull trout		Wild rainbow		Hatchery rainbow	Whitefish[1]	Other[2]
Transect Number	River Section	Length (m)	Width (m)	Area (m^2)	≤300 (mm)	>300 (mm)	≤300 (mm)	>300 (mm)	≤300 (mm)	>300 (mm)			
1	c&k	85	51.0	4,335	0	0	0	0	0	0	0	3	0
2	c&k	89	33.0	2,937	11	2	0	0	0	0	6	20	0
3	c&k	85	14.0	1,190	3	0	0	0	0	0	0	7	0
4	c&k	68	16.0	1,088	3	0	0	0	0	0	0	2	0
5	c&k	90	26.0	2,340	11	0	0	0	0	0	0	10	0
6	c&k	155	32.0	4,960	2	0	0	0	0	0	4	10	0
7	c&k	90	31.0	2,790	4	0	0	0	0	0	1	2	0
8	c&r	143	26.0	3,718	14	2	0	0	0	0	0	9	0
9	c&r	125	24.9	3,113	37	2	0	0	0	0	0	8	0
10	c&r	193	22.7	4,381	37	2	0	0	0	0	0	10	0
11	c&r	82	26.6	2,181	9	0	0	0	0	0	0	2	0
12	c&r	55	29.9	1,645	33	4	0	0	0	0	0	40	0
13	c&r	95	34.5	3,278	24	0	0	0	0	0	0	10	0
14	c&r	90	21.2	1,897	16	0	0	0	0	0	0	15	0
15	c&r	79	17.1	1,342	49	0	0	0	0	0	0	3	0
16	c&r	91	16.7	1,511	49	0	0	0	0	0	0	5	0
17	c&r	122	15.0	1,830	118	7	0	0	0	0	0	13	0
18	c&r	96	15.7	1,507	44	3	0	0	0	0	0	5	0
19	c&r	121	23.8	2,880	341	3	0	0	0	0	0	0	0
20	c&r	70	23.4	1,638	15	4	0	0	0	0	0	3	0
21	c&r	43	24.7	1,062	42	13	0	0	0	0	0	15	0
22	c&r	58	18.3	1,061	43	12	0	0	0	0	0	17	0
23	c&r	50	16.5	825	14	1	0	0	0	0	0	3	0
24	c&r	88	19.0	1,672	6	0	0	0	0	0	0	0	0
25	c&r	71	17.5	1,239	19	0	0	0	0	0	0	2	0
26	c&r	80	21.6	1,680	11	2	0	0	0	0	0	8	0
27	c&r	46	17.5	805	7	5	0	0	0	0	0	5	0
28	c&r	40	17.0	680	12	1	0	0	0	0	0	6	0
29	c&k	180	38.0	6,840	0	1	0	0	0	0	0	25	0
30	c&k	230	45.0	10,350	6	0	0	0	3	0	0	75	100
31	c&k	200	40.0	8,000	2	0	0	0	0	0	1	35	47
32	c&k	64	54.6	3,440	0	0	0	0	4	0	0	32	55
33	c&k	150	47.5	7,125	0	0	0	0	0	0	0	0	0
34	c&k	86	30.0	2,580	6	0	0	0	2	0	2	15	10
35	c&k	75	40.0	3,000	45	0	0	0	9	0	13	0	0

[1] Whitefish includes the number of juveniles and adults.
[2] Includes squawfish and suckers.

Appendix K. Densities for fish observed while snorkeling in transects in the St. Joe River, Idaho, August 1997.

Transect Number	Densities of fish observed							
	Cutthroat		Bull trout		Wild rainbow		Total trout	
	No./m^2	No./100m^2	No./m^2	No./100m^2	No./m^2	No./100m^2	No./m^2	No./100m^2
1	0	0	0	0	0	0	0	0
2	0.004	0.44	0	0	0	0	0.004	0.44
3	0.003	0.25	0	0	0	0	0.003	0.25
4	0.003	0.28	0	0	0	0	0.003	0.28
5	0.005	0.47	0	0	0	0	0.005	0.47
6	<0.001	0.04	0	0	0	0	<0.001	0.04
7	0.001	0.14	0	0	0	0	0.001	0.14
8	0.004	0.43	0	0	0	0	0.004	0.43
9	0.013	1.25	0	0	0	0	0.013	1.25
10	0.009	0.89	0	0	0	0	0.009	0.89
11	0.004	0.41	0	0	0	0	0.004	0.41
12	0.022	2.25	0	0	0	0	0.022	2.25
13	0.007	0.73	0	0	0	0	0.007	0.73
14	0.008	0.84	0	0	0	0	0.008	0.84
15	0.037	3.65	0	0	0	0	0.037	3.65
16	0.032	3.24	0	0	0	0	0.032	3.24
17	0.068	6.83	0	0	0	0	0.068	6.83
18	0.031	3.12	0	0	0	0	0.031	3.12
19	0.013	1.28	0	0	0	0	0.013	1.28
20	0.012	1.16	0	0	0	0	0.012	1.16
21	0.052	5.18	0	0	0	0	0.052	5.18
22	0.052	5.18	0	0	0	0	0.052	5.18
23	0.018	1.82	0	0	0	0	0.018	1.82
24	0.004	0.36	0	0	0	0	0.004	0.36
25	0.015	1.53	0	0	0	0	0.015	1.53
26	0.008	0.77	0	0	0	0	0.008	0.77
27	0.015	1.49	0	0	0	0	0.015	1.49
28	0.019	1.94	0	0	0	0	0.019	1.94
29	<0.001	0.01	0	0	0	0	<0.001	0.01
30	<0.001	0.06	0	0	0	0	<0.001	0.06
31	<0.001	0.03	0	0	<0.001	0.08	0.001	0.11
32	0	0	0	0	0	0	0	0
33	0	0	0	0	<0.001	0.01	<0.001	0.01
34	0.002	0.23	0	0	0	0	0.002	0.23
35	0.015	1.50	0	0	<0.001	0.07	0.016	1.57

Appendix L. Summary of population estimates for trout (>80 mm) captured by electrofishing in several tributaries in the Pend Oreille Lake drainage, Idaho, August 1997. Single pass estimates based the regression equation y=(1.2887)x + 7.1658.

Stream	Reach number	Site number	Length (m)	Width (m)	Area (m^2)	Number of trout collected: Pass 1	Pass 2	Pass 3	Pass 4	Population estimate	Density fish/100 m^2: All trout
East Fork											
		2	30.0	9.4	282.0	24	9	4	--	38	13.5
		3	30.0	8.0	240.0	11	--	--	--	21	8.8
	2	1	30.0	5.8	174.0	6	6	6	--	57	32.8
		2	30.0	8.9	267.0	10	--	--	--	20	7.5
		3	30.0	6.4	192.0	12	--	--	--	23	12.0
	3	1	30.0	5.0	150.0	10	5	4	--	22	14.7
		2	30.0	--	--	10	1	2	--	13	--
		3	30.0	4.1	123.0	6	--	--	--	16	13.0
Savage	1	1	30.0	4.2	126.0	11	--	--	--	21	16.7
		2	30.0	5.2	156.0	5	3	3	--	14	9.0
		3	30.0	5.6	168.0	6	--	--	--	15	9.0
	2	1	30.0	5.2	156.0	9	--	--	--	19	12.2
		2	--	--	--	--	--	--	--	--	--
		3	30.0	3.7	111.0	19	--	--	--	32	28.8
	3	1	30.0	3.7	111.0	21	--	--	--	34	30.6
Savage		2	30.0	3.0	90.0	18	--	--	--	30	33.3
		3	30.0	3.0	90.0	12	--	--	--	23	25.6
Char	1	1	30.0	2.4	72.0	8	--	--	--	17	23.6
		2	30.0	--	--	6	--	--	--	15	--
		3	30.0	1.5	45.0	10	--	--	--	20	44.4
	2	1	30.0	2.4	72.0	6	4	1	--	11	15.3
		2	30.0	2.4	72.0	8	--	--	--	17	23.6
		3	30.0	2.4	72.0	7	--	--	--	16	22.2
	3	1	30.0	1.5	45.0	18	--	--	--	30	66.7
		2	30.0	1.5	45.0	14	--	--	--	25	55.6
		3	30.0	1.5	45.0	25	--	--	--	39	86.7

Appendix L. Continued.

Stream	Reach number	Site number	Length (m)	Width (m)	Area (m^2)	Number of trout collected: Pass 1	Pass 2	Pass 3	Pass 4	Population estimate	Density fish/100 m^2: All trout
Porcupine	1	1	30.0	5.6	168.0	6	--	--	--	15	8.9
		2	30.0	7.6	228.0	4	1	3	0	8	3.5
		3	36.9	5.4	199.3	10	--	--	--	20	10.0
	2	1	36.0	7.2	259.2	6	--	--	--	15	5.8
		2	33.0	6.3	207.9	4	--	--	--	12	5.8
		3	30.0	6.8	204.0	14	--	--	--	25	12.3
	3	1	30.0	5.6	168.0	25	--	--	--	39	14.9
		2	34.9	2.4	83.8	10	--	--	--	20	23.7
		3	--	--	--	--	--	--	--	--	--
Wellington	1	1	33.4	6.6	220.4	2	--	--	--	10	4.5
		2	40.5	6.9	279.5	1	--	--	--	8	2.9
		3	30.0	9.4	282.0	3	--	--	--	11	3.9
	2	1	37.0	6.1	225.7	14	--	--	--	25	11.1
		2	34.5	8.0	276.0	10	5	1	--	16	5.8
		3	30.0	4.4	132.0	21	--	--	--	34	25.3
	3	1	11.9	4.4	52.4	5	--	--	--	14	26.5
		2	30.3	4.4	132.0	9	--	--	--	19	14.4
		3	22.0	.95	20.9	0	--	--	--	0	0
Rattle	1	1	30.0	3.7	111.0	1	--	--	--	8	7.2
		2	30.0	3.0	90.0	2	--	--	--	10	11.1
		3	30.0	3.0	90.0	2	--	--	--	10	11.1
	2	1	30.0	3.0	90.0	5	--	--	--	14	15.6
		2	30.0	3.0	90.0	3	--	--	--	11	12.2
		3	30.0	2.7	81.0	6	--	--	--	15	18.5
	3	1	30.0	3.5	105.0	6	--	--	--	15	14.3
		2	30.0	3.0	90.0	8	--	--	--	17	18.9
		3	30.0	2.5	75.0	2	--	--	--	10	13.3
Trestle	1	1	30.0	6.1	183.0	4	--	--	--	12	6.6
	2	1	30.0	7.9	237.0	10	6	5	--	27	11.4
	3	1	30.0	5.7	171.0	9	--	--	--	19	11.1
	4	1	30.0	7.2	216.0	8	--	--	--	17	7.9

Appendix L. Continued.

Stream	Reach number	Site number	Length (m)	Width (m)	Area (m^2)	Number of trout collected				Population estimate	Density fish/100 m^2
						Pass 1	Pass 2	Pass 3	Pass 4		All trout
Trestle	7	1	30.0	5.8	174.0	8	--	--	--	17	9.8
	8	1	30.0	3.8	114.0	4	2	4	--	20	17.5
Twin	1	1	30.0	3.0	90.0	5	--	--	--	14	15.6
		2	30.0	3.0	90.0	7	--	--	--	16	17.8
		3	--	--	--	--	--	--	--	--	--
	2	1	30.0	3.0	90.0	3	--	--	--	11	12.2
		2	30.0	2.8	84.0	7	0	2	--	9	10.7
		3	30.0	2.4	72.0	7	--	--	--	16	22.2
	3	1	30.0	2.0	60.0	2	--	--	--	10	16.7
		2	30.0	1.5	45.0	4	--	--	--	12	26.7
		3	30.0	1.5	45.0	0	--	--	--	0	0
West Fork											
		2	30.0	3.4	102.0	14	--	--	--	25	24.5
		3	30.0	2.1	63.0	20	--	--	--	33	52.4
	2	1	--	--	--	--	--	--	--	--	--
		2	--	--	--	--	--	--	--	--	--
West Fork		3	--	--	--	--	--	--	--	--	--
	3	1	30.0	--	--	28	--	--	--	43	--
		2	30.0	6.3	189.0	49	--	--	--	70	37.0
		3	30.0	6.4	192.0	36	--	--	--	54	28.1

Appendix M. Summary of population estimates for westslope cutthroat trout (>80 mm) captured by electrofishing in several tributaries in the Pend Oreille Lake drainage, Idaho, August 1997. Single pass estimates based the regression equation y=(1.4677)x +2.1290.

Stream	Reach number	Site number	Length (m)	Width (m)	Area (m^2)	Number of trout collected				Population estimate	Density fish/$100m^2$
						Pass 1	Pass 2	Pass 3	Pass 4		Cutthroat trout
East Fork											
		2	30.0	9.4	282.0	0	0	0	--	0	0
		3	30.0	8.0	240.0	0	--	--	--	0	0
	2	1	30.0	5.8	174.0	0	0	0	--	0	0
		2	30.0	8.9	267.0	1	--	--	--	3.6	1.3
		3	30.0	6.4	192.0	0	--	--	--	0	0
	3	1	30.0	5.0	150.0	0	1	0	--	--	--
		2	30.0	--	--	3	0	1	--	4.0	--
		3	30.0	4.1	123.0	1	--	--	--	3.6	2.9
Savage	1	1	30.0	4.2	126.0	1	--	--	--	3.6	2.9
		2	30.0	5.2	156.0	0	1	3	--	--	--
		3	30.0	5.6	168.0	3	--	--	--	6.5	3.9
	2	1	30.0	5.2	156.0	5	--	--	--	9.5	6.1
		2	--	--	--	--	--	--	--	--	--
		3	30.0	3.7	111.0	19	--	--	--	30.0	27.0
	3	1	30.0	3.7	111.0	21	--	--	--	33.0	29.7
Savage		2	30.0	3.0	90.0	18	--	--	--	28.5	31.7
	3	3	30.0	3.0	90.0	12	--	--	--	19.7	21.9
Char	1	1	30.0	2.4	72.0	4	--	--	--	8.0	11.1
		2	30.0	--	--	3	--	--	--	6.5	--
		3	30.0	1.5	45.0	7	--	--	--	12.4	27.6
	2	1	30.0	2.4	72.0	6	3	2	--	11.0	15.3
		2	30.0	2.4	72.0	8	--	--	--	13.9	19.3
		3	30.0	2.4	72.0	7	--	--	--	12.4	17.2
	3	1	30.0	1.5	45.0	17	--	--	--	27.1	60.2
		2	30.0	1.5	45.0	14	--	--	--	22.7	50.4
		3	30.0	1.5	45.0	25	--	--	--	38.8	86.2
Porcupine	1	1	30.0	5.6	168.0	1	--	--	--	3.6	2.1

Appendix M. Continued.

Stream	Reach number	Site number	Lengt h (m)	Width (m)	Area (m^2)	Number of trout collected				Population estimate	Density fish/100m^2
						Pass 1	Pass 2	Pass 3	Pass 4		Cutthroat trout
Porcupine		2	30.0	7.6	228.0	1	0	2	0	3.0	1.3
		3	36.9	5.4	199.3	7	--	--	--	12.4	6.2
	2	1	36.0	7.2	259.2	1	--	--	--	3.6	1.4
		2	33.0	6.3	207.9	2	--	--	--	5.1	2.5
		3	30.0	6.8	204.0	7	--	--	--	12.4	6.1
	3	1	30.0	5.6	168.0	0	--	--	--	0	0
		2	34.9	2.4	83.8	0	--	--	--	0	0
		3	--	--	--	--	--	--	--	--	--
Wellington	1	1	33.4	6.6	220.4	1	--	--	--	3.6	1.6
		2	40.5	6.9	279.5	0	--	--	--	0	0
		3	30.0	9.4	282.0	3	--	--	--	6.5	2.3
	2	1	37.0	6.1	225.7	14	--	--	--	22.7	10.1
		2	34.5	8.0	276.0	10	5	1	--	16.0	5.8
		3	30.0	4.4	132.0	21	--	--	--	33.0	25.0
	3	1	11.9	4.4	52.4	5	--	--	--	9.5	18.1
		2	30.3	4.4	132.0	9	--	--	--	15.3	11.6
		3	22.0	.95	20.9	0	--	--	--	0	0
Rattle	1	1	30.0	3.7	111.0	0	--	--	--	0	0
		2	30.0	3.0	90.0	0	--	--	--	0	0
		3	30.0	3.0	90.0	0	--	--	--	0	0
	2	1	30.0	3.0	90.0	0	--	--	--	0	0
Rattle		2	30.0	3.0	90.0	1	--	--	--	3.6	4.0
		3	30.0	2.7	81.0	2	--	--	--	5.1	6.3
	3	1	30.0	3.5	105.0	6	--	--	--	10.9	10.4
		2	30.0	3.0	90.0	8	--	--	--	13.9	15.4
		3	30.0	2.5	75.0	2	--	--	--	5.1	6.8

Appendix M. Continued.

Stream	Reach number	Site number	Lengt h (m)	Width (m)	Area (m^2)	Number of trout collected				Population estimate	Density fish/100m²
						Pass 1	Pass 2	Pass 3	Pass 4		Cutthroat trout
Trestle	1	1	30.0	6.1	183.0	4	--	--	--	8.0	4.4
	2	1	30.0	7.9	237.0	1	3	1	--	6	2.5
	3	1	30.0	5.7	171.0	5	--	--	--	9.5	5.6
	4	1	30.0	7.2	216.0	4	--	--	--	8.0	3.7
	5	1	30.0	6.2	186.0	4	3	2	--	10.0	5.4
	6	1	30.0	6.9	207.0	5	6	1	--	13	6.3
	7	1	30.0	5.8	174.0	5	--	--	--	9.5	5.5
	8	1	30.0	3.8	114.0	3	1	2	--	6	5.3
	9	1	30.0	4.0	120.0	1	--	--	--	3.6	3.0
Twin	1	1	30.0	3.0	90.0	1	--	--	--	3.6	4.0
		2	30.0	3.0	90.0	0	--	--	--	0	0
		3	--	--	--	--	--	--	--	--	--
	2	1	30.0	3.0	90.0	2	--	--	--	5.1	5.7
		2	30.0	2.8	84.0	3	0	0	--	3.0	3.6
		3	30.0	2.4	72.0	3	--	--	--	6.5	9.0
	3	1	30.0	2.0	60.0	2	--	--	--	5.1	8.5
		2	30.0	1.5	45.0	4	--	--	--	8.0	17.8
		3	30.0	1.5	45.0	0	--	--	--	0	0
West Fork											
		2	30.0	3.4	102.0	14	--	--	--	22.7	22.3
		3	30.0	2.1	63.0	20	--	--	--	31.5	50.0
	2	1	--	--	--	--	--	--	--	--	--
West Fork		2	--	--	--	--	--	--	--	--	--
		3	--	--	--	--	--	--	--	--	--
	3	1	30.0	--	--	28	--	--	--	43.2	--
		2	30.0	6.3	189.0	49	--	--	--	74.0	39.2
		3	30.0	6.4	192.0	36	--	--	--	55.0	28.6

Appendix N. Summary of population estimates for bull trout (>80 mm) captured by electrofishing in several tributaries in the Pend Oreille Lake drainage, Idaho, August 1997. Single pass estimates based the regression equation y=(1.8039)x + (-0.6215).

Stream	Reach number	Site number	Length (m)	Width (m)	Area (m^2)	Number of trout collected: Pass 1	Pass 2	Pass 3	Pass 4	Population estimate	Density fish/100 m^2: Bull trout
East Fork Lightning		2	30.0	9.4	282.0	0	0	0	--	0	0
		3	30.0	8.0	240.0	2	--	--	--	3.0	1.3
	2	1	30.0	5.8	174.0	3	0	0	--	3.0	1.7
		2	30.0	8.9	267.0	1	--	--	--	1.0	0.4
		3	30.0	6.4	192.0	5	--	--	--	8.3	4.3
	3	1	30.0	5.0	150.0	6	3	3	--	14.0	9.3
		2	30.0	--	--	3	2	0	--	5.0	--
		3	30.0	4.1	123.0	2	--	--	--	3.0	2.4
Savage	1	1	30.0	4.2	126.0	4	--	--	--	6.6	5.2
		2	30.0	5.2	156.0	2	1	0	--	3	1.9
		3	30.0	5.6	168.0	3	--	--	--	4.8	2.9
	2	1	30.0	5.2	156.0	4	--	--	--	6.6	4.2
		2	--	--	--	--	--	--	--	--	--
		3	30.0	3.7	111.0	0	--	--	--	0	0
	3	1	30.0	3.7	111.0	0	--	--	--	0	0
		2	30.0	3.0	90.0	0	--	--	--	0	0
		3	30.0	3.0	90.0	0	--	--	--	0	0
Char	1	1	30.0	2.4	72.0	3	--	--	--	5.0	6.9
		2	30.0	--	--	0	--	--	--	0	--
		3	30.0	1.5	45.0	2	--	--	--	3.0	6.7
	2	1	30.0	2.4	72.0	0	0	0	--	0	0
		2	30.0	2.4	72.0	0	--	--	--	0	0
		3	30.0	2.4	72.0	0	--	--	--	0	0
	3	1	30.0	1.5	45.0	0	--	--	--	0	0
		2	30.0	1.5	45.0	0	--	--	--	0	0
		3	30.0	1.5	45.0	0	--	--	--	0	0
Porcupine	1	1	30.0	5.6	168.0	0	--	--	--	0	0
		2	30.0	7.6	228.0	0	0	0	0	0	0

Appendix N. Continued.

Stream	Reach number	Site number	Length (m)	Width (m)	Area (m^2)	Number of trout collected				Population estimate	Density fish/100 m^2
						Pass 1	Pass 2	Pass 3	Pass 4		Bull trout
Porcupine		3	36.9	5.4	199.3	0	--	--	--	0	0
	2	1	36.0	7.2	259.2	3	--	--	--	5.0	1.9
		2	33.0	6.3	207.9	2	--	--	--	3.0	1.4
		3	30.0	6.8	204.0	7	--	--	--	12.0	5.9
	3	1	30.0	5.6	168.0	0	--	--	--	0	0
		2	34.9	2.4	83.8	0	--	--	--	0	0
		3	--	--	--	--	--	--	--	--	--
Wellington	1	1	33.4	6.6	220.4	0	--	--	--	0	0
		2	40.5	6.9	279.5	1	--	--	--	1.0	0.4
		3	30.0	9.4	282.0	0	--	--	--	0	0
	2	1	37.0	6.1	225.7	0	--	--	--	0	0
		2	34.5	8.0	276.0	0	0	0	--	0	0
		3	30.0	4.4	132.0	0	--	--	--	0	0
	3	1	11.9	4.4	52.4	0	--	--	--	0	0
		2	30.3	4.4	132.0	0	--	--	--	0	0
		3	22.0	.95	20.9	0	--	--	--	0	0
Rattle	1	1	30.0	3.7	111.0	1	--	--	--	1.0	0.9
		2	30.0	3.0	90.0	2	--	--	--	3.0	3.3
		3	30.0	3.0	90.0	2	--	--	--	3.0	3.3
	2	1	30.0	3.0	90.0	0	--	--	--	0	0
		2	30.0	3.0	90.0	1	--	--	--	1.0	1.1
		3	30.0	2.7	81.0	4	--	--	--	6.6	8.1
	3	1	30.0	3.5	105.0	0	--	--	--	0	0
		2	30.0	3.0	90.0	0	--	--	--	0	0
		3	30.0	2.5	75.0	0	--	--	--	0	0
Trestle	1	1	30.0	6.1	183.0	0	--	--	--	0	0
	2	1	30.0	7.9	237.0	9	3	3	--	16.0	6.8
	3	1	30.0	5.7	171.0	4	--	--	--	6.6	3.9
	4	1	30.0	7.2	216.0	4	--	--	--	6.6	3.1
	5	1	30.0	6.2	186.0	7	3	1	--	11.0	5.9
	6	1	30.0	6.9	207.0	9	2	3	--	14.0	6.8
	7	1	30.0	5.8	174.0	3	--	--	--	4.8	2.8

Appendix N. Continued.

Stream	Reach number	Site number	Length (m)	Width (m)	Area (m^2)	Number of trout collected				Population estimate	Density fish/100 m^2
						Pass 1	Pass 2	Pass 3	Pass 4		Bull trout
Trestle	8	1	30.0	3.8	114.0	1	0	3	--	--	--
	9	1	30.0	4.0	120.0	3	--	--	--	4.8	4.0
Twin	1	1	30.0	3.0	90.0	4	--	--	--	6.6	7.3
		2	30.0	3.0	90.0	5	--	--	--	8.3	9.2
		3	--	--	--	--	--	--	--	--	--
	2	1	30.0	3.0	90.0	0	--	--	--	0	0
		2	30.0	2.8	84.0	0	0	0	--	0	0
		3	30.0	2.4	72.0	0	--	--	--	0	0
	3	1	30.0	2.0	60.0	0	--	--	--	0	0
		2	30.0	1.5	45.0	0	--	--	--	0	0
		3	30.0	1.5	45.0	0	--	--	--	0	0
West Fork Blue		2	30.0	3.4	102.0	0	--	--	--	0	0
		3	30.0	2.1	63.0	0	--	--	--	0	0
	2	1	--	--	--	--	--	--	--	--	--
		2	--	--	--	--	--	--	--	--	--
		3	--	--	--	--	--	--	--	--	--
	3	1	30.0	--	--	0	--	--	--	0	--
		2	30.0	6.3	189.0	0	--	--	--	0	0
		3	30.0	6.4	192.0	0	--	--	--	0	0

Appendix O. Estimated population abundance and densities of trout, captured by electrofishing, in several streams in northern Idaho, 1997. (Data provided by Division of Environmental Quality. Single pass estimates calculated using 63% catch efficiency).

		Number of fish							
Drainage	Stream	Pass 1	Pass 2	Population estimate	Reach length (m)	Reach width (m)	Reach area (m^2)	Fish/m^2	Fish/100m^2
Coeur d'Alene Lake	S. F. Mica Creek	6		9.5	100	2.0	200	0.04	4.7
	Fernan Creek (upper)	7		11.1	100	1.5	150	0.07	7.4
	Cougar Creek (upper)	19		30.1	100	2.0	200	0.15	15.0
	Wolf Lodge Creek (upper)	13		20.6	100	4.0	400	0.05	5.1
	Wolf Lodge Creek (lower)	13		20.6	100	4.0	400	0.05	5.1
Little North Fork Coeur d'Alene River	L.N.F.Cd'A River (middle)	15		23.8	275	12.0	3300	<0.01	0.72
	Laverne Creek	4		6.3	120	5.0	600	0.01	1.05
	Bumblebee Creek	21		33.3	115	3.5	402	0.08	8.2
North Fork Coeur d'Alene River	Lost Fork Creek	6		9.5	100	4.0	400	0.02	2.3
	Buckskin Creek	20		31.7	100	5.0	500	0.06	6.3
	Prichard Creek (upper)	9		14.2	100	5.0	500	0.02	2.8
North Fork Coeur d'Alene River	Prichard Creek (lower)	3		4.7	200	10.0	2000	<0.01	.23

Appendix O. Continued.

Drainage	Stream	Number of fish: Pass 1	Number of fish: Pass 2	Population estimate	Reach length (m)	Reach width (m)	Reach area (m^2)	Fish/m^2	Fish/100m^2
North Fork Coeur d'Alene River	Moon Creek	11		17.4	100	2.5	250	0.06	6.9
	Downy Creek (lower)	8		12.6	110	4.5	495	0.02	2.5
	Cinnamon Creek	3		4.7	100	5.0	500	<0.01	0.95
	Spruce Creek	15		23.8	100	3.0	300	0.07	7.9
	Independence Creek (lower)	3		4.7	220	12.0	2640	<0.01	0.17
South Fork Coeur d'Alene River	E.F. Pine Creek	4		6.3	120	5.0	600	0.01	1.01
	Big Creek	18		28.5	100	4.5	450	0.06	6.3
	Lake Creek	35		55.5	100	4.0	400	0.13	13.8
Coeur d'Alene River	Forth of July Creek	5		7.9	100	4.0	400	0.01	1.9
St. Joe River	E.F. Big Creek	20	22	31.7	200	10.0	2000	0.01	1.5
	Burton Creek	34		53.9	100	3.0	300	0.17	17.9
	Nugget Creek	44		69.8	100	5.0	500	0.13	13.9

Appendix O. Continued.

Drainage	Stream	Number of fish		Population estimate	Reach length (m)	Reach width (m)	Reach area (m^2)	Fish/m^2	Fish/100m^2
		Pass 1	Pass 2						
St. Joe River	Skookum Creek	30		47.6	120	6.0	720	0.06	6.6
	Big Creek (upper)	6		9.5	200	10.0	2000	<0.01	0.47
	Sisters Creek (upper)	25		39.6	100	3.5	350	0.11	11.3
	Mosquito Creek	12		19.0	100	4.0	400	0.04	4.7
	Gold Creek (lower)	26		41.2	160	8.0	1280	0.03	3.2
	Fishhook Creek (upper)	5		7.9	110	5.0	550	0.01	1.4
	Falls Creek (lower)	1		1.6	160	8.0	1280	<0.01	0.12
	Little Beaver Creek	3		4.8	100	1.0	100	0.05	0.047
	Mica Creek (upper)	22	11	34.9	110	5.5	605	0.05	5.7
	Mica Creek (middle)	13		20.6	120	5.5	660	0.03	3.1
	Mica Creek (lower)	11		17.4	140	7.0	980	0.01	1.7
	Bear Creek (lower)	12		19.0	100	1.5	150	0.12	12.6
North Fork St. Joe River	Loop Creek (lower)	28		44.4	120	6.0	720	0.06	6.1
	Loop Creek (upper)	15		23.8	200	10.0	2000	0.01	1.1
	Hammond Creek	39		61.9	100	4.5	450	0.13	13.7

Appendix O. Continued.

Drainage	Stream	Number of fish: Pass 1	Number of fish: Pass 2	Population estimate	Reach length (m)	Reach width (m)	Reach area (m^2)	Fish/m^2	Fish/100m^2
St. Maries River	Carpenter Creek (upper)	39		61.9	100	4.0	400	0.15	15.4
	John Creek (upper)	41		65.0	100	2.0	200	0.32	32.5
	Emerald Creek (upper)	2		3.17	100	4.5	450	<0.01	0.70
Spirit Lake	Brickel Creek (lower)	55		87.0	140	7.0	980	0.08	8.8
Twin Lakes	Fish Creek (upper)	40		63.4	100	5.0	500	0.12	12.6
	Fish Creek (lower)	36		57.1	120	6.0	720	0.07	7.9
Pend Oreille River	Cocolalla Creek	95		150.0	100	4.0	400	0.37	37.6
Pack River	Spring Creek	44		69.8	100	4.0	400	0.17	17.4
Priest Lake	Two Mouth Creek (upper)	37		58.7	160	8.0	1280	0.04	4.5
	Granite Creek	5		7.9	200	10.0	2000	<0.01	0.39
Priest River	Big Creek	41		65.0	100	5.0	500	0.13	13.0
	East River (middle)	24		38.0	120	6.0	720	0.05	5.2
	Middle Fork East River	23		36.5	140	7.0	980	0.03	3.7
Kootenai River	Snow Creek	26		41.2	105	5.0	525	0.07	7.8

1997 ANNUAL PERFORMANCE REPORT

State of: Idaho Program: Fisheries Management F-71-R-22

Project: II - Technical Guidance Subproject: I-A - Panhandle Region

Contract Period: July 1, 1997 to June 30, 1998

ABSTRACT

Panhandle Region fisheries management personnel provided private individuals, organizations, public schools, and state and federal agencies with technical review and advice on various projects and activities that affect the fishery resources in northern Idaho. Technical guidance also included numerous angler informational meetings, presentations, and letters, continuation of the Panhandle Region portion of the 1-800 ASK-FISH program, and fishing clinics.

Author:

Ned Horner
Regional Fishery Manager

OBJECTIVES

1. To furnish technical assistance, advice and comments to other agencies, organizations, or individuals regarding projects that affect fishery resources in northern Idaho.

2. To promote the understanding of fish biology and fish habitat needs and the ethical use of the fishery resource through individual contact, public school curriculum, club meetings, public presentations, informational brochures, and fishing clinics.

METHODS

Regional fisheries management personnel provided both written and oral technical guidance.

RESULTS AND DISCUSSION

The technical guidance provided by Panhandle Region fish management personnel focused on activities that directly affected fishery resources or resource users in north Idaho. Numerous presentations and programs were made to civic and sportsmen's groups throughout the year. Letters were sent to numerous individuals and organizations in response to specific questions about the fisheries in northern Idaho.

Fishing Clinics

Regional fishery management personnel coordinated six Free Fishing Day fishing clinics in the Panhandle Region. Department-sponsored clinics were held in Bonners Ferry at the Lions Club Snow Creek Pond, Coeur d'Alene at Ponderosa Golf Course, near St. Maries at Anderson Ranch Pond, at Round Lake State Park near Sandpoint, and at the Clark Fork and Mullan Fish Hatcheries. We also provided fish and guidance for a clinic at Priest Lake sponsored by the U.S. Forest Service. The clinics were geared toward teaching young anglers how to fish (casting, baiting hooks, etc.), fish identification, the reasons for regulations, fishing ethics, and how to clean fish. The emphasis was on education and not competition. Regional personnel, people from other state and federal agencies, and sportsmen's groups helped in making the clinics a big success.

1-800-ASK-FISH

Regional fishery management personnel provided information on northern Idaho fishing opportunities for the 1-800-ASK-FISH and Idaho Fish and Game Internet Web Page angler information program. Several tackle shops, local fishing experts, and Conservation Officers were consulted to provide additional information on fishing activities.

Bull Trout Issues

The Regional Fishery Manager provided information on the abundance and status of bull trout populations in Panhandle Region waters to numerous individuals, organizations, and personnel from state and federal agencies working on issues related to bull trout listing. The Fisheries Manager participated on a 12-member scientific advisory team panel to assess bull trout and lake trout interactions and management implications in Flathead Lake, Montana. Slide show presentations on the lake trout/bull trout population assessment and lake trout removal program in Upper Priest Lake were presented at the International Kokanee Workshop in Kalispell, Montana, at the Idaho Chapter American Fisheries Society meeting in Idaho Falls, and at the Priest Lake Bull Trout WAG (Watershed Advisory Group) meeting. A peer reviewed manuscript on the effectiveness of sport anglers in selectively removing lake trout from Upper Priest Lake was prepared for the North American Journal of Fisheries Management.

Pend Oreille Lake Water Management

Fishery research personnel were responsible for completing all field activities, while the Fisheries Manager kept the public informed and involved in efforts to change lake level management on Lake Pend Oreille. Several sportsmen meetings were attended, articles were written, and interviews were given to newspapers. The Fisheries Manager provided guidance to fisheries research personnel and University of Idaho researchers on proposed graduated student projects to insure management objectives were met.

Cabinet Gorge Relicensing

The Regional Fishery manager reviewed and commented on fisheries related issues associated with the relicensing of Washington Water Power's Cabinet Gorge Dam. The Regional Environmental Staff Biologist is attending all relicensing meetings and coordinating comments.

Kootenai River Sturgeon

The Regional Fisheries Manager coordinated with the Kootenai River sturgeon/burbot/trout research team, Kootenai Tribe, U.S. Fish and Wildlife Service, British Columbia Ministry on Environment and the Fisheries Bureau to review and comment on issues related to sturgeon and burbot flow requests, conservation culture, and transboundary management programs.

Miscellaneous

Coordination meetings were held with hatchery, research, enforcement and Fisheries Bureau personnel to ensure management goals were achieved. Private pond permits, transport permits, requests for grass carp importation, and fish tournament applications were reviewed and forwarded. Requests for commercial guiding activities were reviewed and commented on. Anglers were kept informed of regional fishing opportunities and management programs at club meetings, monthly Sportsmen Breakfasts, through informational articles written for Panhandle Region newspapers, and numerous interviews with television, newspaper, and radio reporters. The Regional Fisheries Management staff presented several programs to Panhandle Region schools on cutthroat trout and participated in other Water Awareness Week activities. Testimony was presented at a Bonner County Waterways Commission hearing about the Electric Motors Only rule and its popularity and appropriateness for Shepherd and Gamblin lakes. Provide fisheries input to Riley Creek Lumber Company on their management practices, the Federal Highway Administration for a proposed upgrade to the Fernan Lake road, and private landowners, Hoodoo Creek Drainage District, and the Forest Service on proposals to dredge Hoodoo and Round Prairie creeks.

1997 ANNUAL PERFORMANCE REPORT

State of: Idaho Program: Fisheries Management F-71-R-21

Project: III - Habitat Management Subproject: I-A - Panhandle Region

Contract Period: July 1, 1997 to June 30, 1998

ABSTRACT

A culvert inventory program was continued to identify impassible culverts in the Pend Oreille Lake and St. Joe River drainages. Volunteers were used to collect site specific data on both the culvert and stream channel that may preclude fish passage.

Authors:

Ned Horner
Regional Fishery Manager

Jim Davis
Regional Fisheries Biologist

METHODS

Culvert Inventory

Volunteers were given maps identifying specific stream routes where culverts needed inspection. An instruction sheet (Appendix A) identified specific measurements to take at each culvert site. Eight routes were identified in the Pend Oreille Lake drainage and 13 in the St. Joe River drainage. The Pend Oreille and St. Joe drainages were prioritized because they are two of the last strongholds for bull trout in the Panhandle Region.

RESULTS AND DISCUSSION

Culvert Inventory

Most salmonid habitat in the Panhandle Region is located on forested lands, much of that within the boundaries of the Panhandle National Forest. Over 10,000 km of roads have been constructed to access the forests and extract timber, and the number of culverts in those roads is in the tens of thousands. Improperly installed culverts can block access to useable habitat for upstream migrating salmonids. It is a high priority to identify culverts that have excluded salmonids from utilizing significant amounts of spawning and rearing habitat and work with land managers to fix those blockages.

Volunteers were given maps and instruction sheets on the routes needing inspection. The required measurements included: length and diameter of the culvert, culvert gradient, drop from the bottom of the culvert to the plunge pool, depth of the plunge pool, and velocity in the culvert. Velocity was measured by timing a floated object through the culvert. A video was produced describing how to make these measurements. Volunteers had not yet completed the assigned routes as of this report.

APPENDIX

Appendix A. Instructions for stream culvert measurements

1. Set or mark odometer mileage at beginning of the road.

2. Record stream name.

3. Record road name or number (i.e., Lightning Creek Rd. or FS 489).

4. Record mileage to first culvert. Identify culvert as #1, #2.... etc.

5. Make culvert measurements.

    a. **Culvert length**- use tape measure and measure from one end to the other. Record distance in feet and inches.

    b. **Culvert diameter**- measure across the widest point.

    c. **Culvert drop** -

    outlet (downstream end)- measure from the bottom of the culvert to the top of the water.
    inlet (upstream end)- measure from the bottom of the culvert to the top of the water (usually 0).

    d. **Velocity**- measure the time (**in seconds**) that it takes a rubber ball, tennis ball, orange, or a stick to float through the culvert. Do this **twice** and record the average time.

    e. **Plunge pool depth**- measure the depth of the water where it lands at the downstream end of the culvert.

    f. **Comments**- does the culvert empty onto rocks or into a pool.

TOOLS NEEDED

1. Tape measure
2. Staff (i.e., broom handle) marked in 6 inch increments, minimum 4 feet long for depth.
3. Tennis or rubber ball, orange, or stick for velocity measurements.
4. Watch with second hand or stop watch.
5. Data sheets and map
6. Hip boots (optional)

1997 ANNUAL PERFORMANCE REPORT

State of: Idaho   Program: Fisheries Management F-71-R-22

Project: IV - Population Management   Subproject: I-A -Panhandle Region

Contract Period: July 1, 1997 to June 30, 1998

ABSTRACT

No lakes in the Panhandle Region were restored with rotenone during this contract period.

Panhandle Region lowland lakes and rivers were stocked with 180,775 put-and-take rainbow trout. Put-grow-and-take stocking included 302,268 domestic Kamloops rainbow trout for Hayden Lake and 63,143 surplus rainbow trout of different strains stocked into six lakes and two streams. Cutthroat trout stocking included 333,616 put-grow-and-take fish in nine lakes, 22,785 surplus put-grow-and-take fish in four other lakes and 505,824 surplus fry into five streams. There were essentially no net pen reared cutthroat fingerlings released into Pend Oreille Lake in 1997. Other trout species stocked included 20,818 brook trout and 4,000 brown trout fingerlings. Pend Oreille Lake was stocked with 3.7 million kokanee fry, but the only lowland lake receiving kokanee in 1997 was Mirror Lake with 1,470 fry. Coeur d'Alene Lake received 12,650 fall chinook fingerlings. Five lakes were stocked with a total of 899 tiger muskies and five lakes and the St. Maries River were stocked with a total of 16,661 channel catfish.

Hatchery personnel and volunteers stocked 31 mountain lakes in the Panhandle Region in 1997. Most lakes were stocked at a density of around 620 fish/ha. Species stocked included westslope cutthroat trout, domestic Kamloops rainbow trout, and grayling.

Authors:

Ned Horner
Regional Fishery Manager

Jim Fredericks
Regional Fisheries Biologist

OBJECTIVES

1. Utilize rotenone to restore lowland lakes to productive trout fisheries when undesirable species become too numerous and there is support from the angling public.

2. Stock lowland lakes and sections of rivers to provide productive trout fisheries where wild trout recruitment is inadequate or angler effort is too high to maintain a fishery with wild production alone.

3. Stock low densities of kokanee fry in select lowland lakes to create a unique fishery for large kokanee.

4. Utilize net pens to rear westslope cutthroat trout for release in Pend Oreille Lake.

5. Stock hatchery reared channel catfish and tiger muskies to provide unique fisheries.

6. Provide diverse angling opportunities in mountain lakes of the Panhandle Region by maintaining a stocking program with different species of salmonids.

INTRODUCTION

Lowland and mountain lakes in the Panhandle Region are capable of growing trout and salmon, but recruitment from wild fish is lacking or inadequate to provide a fishery without stocking. Kokanee fry, put-grow-and-take (fingerling) rainbow, cutthroat and a few brook and brown trout, and put-and-take (catchable) rainbow are utilized to create salmonid fisheries depending on the productivity of the lake and amount of angling effort it receives. Kokanee fry from the Cabinet Gorge Hatchery are stocked in Pend Oreille Lake to supplement wild production lost to the construction of Albeni Falls and Cabinet Gorge dams. Kokanee fry are also stocked at low densities in five lowland lakes to try and grow exceptionally large kokanee. Westslope cutthroat fingerlings are reared in net pens and released in Pend Oreille Lake. The net pen program has been a cooperative project between local angling clubs, Washington Water Power, and IFG.

Some rivers are also stocked with put-and-take rainbow trout, but only where angler access is good and fishing effort is high. Stocked river sections are signed and advertised in brochures to improve returns, but the statewide guideline of a 40% return to the creel by numbers generally is not being met. Methods to increase returns, such as stocking fewer fish more frequently, stocking larger fish or sterile fish, stocking tributary streams versus the main river are being evaluated. Another alternative is to further reduce hatchery trout stocking in rivers, but this will require better public acceptance of restrictive regulations capable of maintaining wild trout. It may also involve the development of alternative fisheries, like catch out ponds built along rivers.

New fisheries for warmwater species have been created by stocking channel catfish and tiger muskies in a few Panhandle Region lowland lakes. These fisheries will depend on continued maintenance stocking because summer temperatures are not adequate for channel catfish to reproduce and tiger muskies are a sterile hybrid.

METHODS

Lake restoration follows standard procedures in the lake renovation procedures manual (Horton 1997).

Hatchery personnel stocked put-and-take rainbow trout into lowland lakes and drive-to mountain lakes throughout the Panhandle Region and sections of river in the Coeur d'Alene River, St. Joe River, and Moyie River drainages. Put-grow-and-take rainbow and cutthroat were utilized in larger lowland lakes or where a cutthroat fishery is desired. The net pen rearing program for cutthroat trout in Pend Oreille Lake was discontinued in 1997 due to lack of public support. Brook trout were stocked in Bloom Lake, Mirror Lake, and Perkins Lake and brown trout were stocked in Hoodoo Creek to provide specialty fisheries. Fall chinook were stocked in Coeur d'Alene Lake to supplement wild production. Kokanee fry from the Cabinet Gorge Hatchery were stocked in the Clark Fork River and Sullivan Springs (tributary to Granite Creek on the east side of Pend Oreille Lake) to supplement this regionally important kokanee fishery. Kokanee fry from other sources are generally used to support the lowland lake kokanee program.

Mountain lakes were stocked with salmonid fry according to the odd year schedule of the Panhandle Region mountain lakes stocking schedules (Appendices A and B). Stocking was completed by hatchery personnel and volunteers using backpacks, horses, and where accessible, motorized vehicles.

RESULTS AND DISCUSSION

Lake Restoration

No lakes were treated with rotenone in 1997.

Salmonid Stocking

In 1997, a total of 180,775 put-and-take rainbow trout were stocked in the Panhandle Region, 151,961 in 28 lowland and drive-to mountain lakes and 28,814 in sections of nine rivers or streams. Hayspur, domestic Kamloops, and unspecified stocks of rainbow trout were used for put-and-take stocking.

Fingerling westslope cutthroat trout from the Clark Fork Hatchery were stocked in nine lakes to provide put-grow-and-take fisheries. Surplus fry and fingerlings were available in 1997 and the fingerlings were stocked in four lakes, while the fry were stocked in five streams. (Table 1).

Fingerling brook trout were stocked in Bloom Lake, Mirror Lake, and Perkins Lake to maintain popular put-grow-and-take fisheries. Five additional lakes were stocked with surplus brook trout fingerlings. Hoodoo Creek is the only water in the Panhandle Region stocked with brown trout (Table 2).

There were only enough kokanee fry to stock Mirror Lake in 1997, out of the five lowland lakes that are normally stocked. Low densities of kokanee fry are stocked to provide a unique fishery for larger than average sized kokanee (Table 2). Kokanee harvested from lakes managed as high yield fisheries (Coeur d'Alene Lake, Spirit Lake, and Pend Oreille Lake) typically average about 25 cm. In the lakes stocked with low densities of

Table 1. Summary of cutthroat trout stocked in lowland lakes of the Panhandle Region, northern Idaho, in 1997.

Species Stocked	Lake Stocked		Number Stocked	Comments
Cutthroat Trout				
Fingerling Program	Cocolalla Lake		32,886	
	Fernan Lake		19,845	
	Hauser Lake		40,222	
	Hayden Lake		100,122	
	Jewel		2,523	
	Lower Twin Lake		8,760	
	Mirror Lake		10,011	
	Pend Oreille Lake		94,200	
	Spirit Lake		25,047	
		Total	333,616	
Surplus Fry	Brickle Creek		104,855	
	Cocolalla Creek		50,778	
	Fish Creek		148,618	
	Hayden Creek		100,950	
	Hoodoo Creek		100,613	
		Total	505,824	
Surplus Fingerlings	Brush Lake		5,040	
	Robinson Lake		5,040	
	Sinclair Lake		525	
	Upper Twin Lake		12,180	
		Total	22,785	

Table 2. Summary of fingerling rainbow, brook and brown trout, kokanee fry and fall chinook salmon fingerlings stocked in lowland lakes and rivers of the Panhandle Region, northern Idaho, in 1997.

Species Stocked	Lake Stocked	Number Stocked	Comments
Rainbow Trout			
Fingerling Program	Hayden Lake	302,268	
Surplus Fingerling	Antelope Lake	984	
	Brush Lake	2,040	
	Cocolalla Lake	12,747	
	Hauser Lake	12,747	
	Hayden Creek	1,336	
	Moyie River	424	
	Round Lake	3,937	
	Lower Twin Lake	28,928	
	Total	63,143	
Brook Trout			
Fingerling Program	Bloom Lake	3,503	
	Mirror Lake	6,131	
	Perkins Lake	5,073	
	Total	14,707	
Surplus Fingerling	Antelope Lake	2,111	
	Brush Lake	1,000	
	Cocolalla Lake	1,000	
	Kelso Lake	1,000	
	Smith Lake	1,000	
	Total	6,111	
Brown Trout	Hoodoo Creek	4,000	
Kokanee			
Lowland Lake Program	Mirror Lake	1,470	
Pend Oreille Lake	Clark Fork River	1,004,687	Cabinet Gorge ladder
	Sullivan Springs	2,716,010	
	Total	3,720,697	
Fall Chinook Salmon	Coeur d'Alene Lake	12,650	Stocked at the Mineral Ridge boat ramp

kokanee fry, fish from 38 cm to 56 cm have been caught, but catch rates are typically low and kokanee are included in the aggregate trout limit of six fish. Only 3.7 million kokanee fry from the Cabinet Gorge Hatchery were stocked in Pend Oreille Lake in 1997 (Table 2).

Coeur d'Alene Lake is the only Panhandle Region water stocked with chinook salmon (Table 2). A detailed report on the Coeur d'Alene Lake chinook/kokanee program is in Job 1-b of this report. Detailed stocking records for all species stocked in the Panhandle Region are available in the IDFG 1997 stocking records booklet available through individual hatcheries and regional or headquarters offices.

Channel Catfish

Channel catfish have been stocked in the Panhandle Region since 1985 in an effort to diversify the warmwater fishery (Table 3). The fishery is dependent on hatchery stocking because it appears that we do not have adequate temperatures to achieve natural reproduction (Fredericks et. al., 1997). We have utilized channel catfish stocks from the Midwest that are adapted to winter conditions to increase survival. Stocking has been intermittent due to the lack of funding in some years.

Stocking locations have been modified over the years to make the best use of this limited resource. Fish from Blue Lake (Bonner County) are now stocked in Freeman Lake due to access problems for anglers at Blue Lake. Dawson Lake fish have been shifted to Smith Lake because it was reported that very few channel catfish were caught from Dawson and Smith lakes has a limited warmwater fishery. Channel catfish stocking was discontinued in the St. Joe River in 1993 and 1997 was the last year they were stocked in the St. Maries River. Most of the fish were reported caught downstream in one of the connecting lakes (Chatcolet, Benewah or Round lakes) to the St. Joe River, not in the St. Maries River where the fishery was needed. The Coeur d'Alene Indian Tribe also raised concerns about the potential for channel catfish to interfere with their native fish species restoration plans. Rose Lake has been put on the schedule for future channel catfish stocking.

Channel catfish over 8 kg have been verified in the angler catch from both Cocolalla and Fernan lakes, although the typical fish harvested is generally 1 to 3 kg. Currently, channel catfish fall under the statewide rules of a year round season and unlimited catch. This may not be the appropriate management for a fishery that is total hatchery dependent and subject to intermittent stocking, but we will need to do a comprehensive survey to quantify catch, harvest, and angler effort before any changes are proposed.

Tiger Muskie

Tiger muskies were first introduced into the Panhandle Region in 1989 (Table 4). Survival of the 1989 fish was poor due to small, unhealthy fish, so essentially the program started in 1990. The program was intended to start with an initial stocking rate of 1.2/ha with a follow up stocking of .5/ha every other year. Availability of fish has been intermittent and numbers of fish have been limited, so we have not met the intended stocking goal. Tiger muskies are managed under a statewide rule of two fish, 30-inch minimum size and year round season.

We discontinued stocking tiger muskies in the St. Joe River, because these fish never produced the in-river fishery as intended. Legal size tiger muskies have been caught by anglers from all lowland lakes, but Hauser Lake has produced all the current state record fish to date (Table 5).

Table 3. Stocking history for channel catfish in lowland lakes and rivers of the Panhandle Region, northern Idaho, 1985 through 1997.

Species/Water	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994-1996	1997
Channel Catfish											
Blue Lake	---	---	---	---	---	2,000	2,000	---	3,000	No	---
Cocolalla Lake	15,272	---	2,044	4,980	10,000	8,000	8,000	---	9,000	Stocking (NS)	5,661
Dawson Lake	---	---	---	---	2,000	2,000	2,000	---	2,000	(NS)	---
Fernan Lake	---	---	2,044	4,980	---	4,000	4,000	---	5,000	(NS)	2,500
Freeman Lake	---	---	---	---	---	---	---	---	---	(NS)	1,500
Hauser Lake	---	---	---	---	10,000	8,000	8,000	---	8,000	(NS)	3,000
Smith Lake	---	---	---	---	---	---	---	---	---	(NS)	1,000
St. Joe River	---	---	---	---	12,000	5,000	5,000	---	---	(NS)	---
St. Maries River	---	---	---	---	12,000	5,000	5,000	---	5,000	(NS)	3,000
TOTAL	15,272	0	4,088	9,960	46,000	34,000	34,000	0	32,00	0	16,661

Table 4. Stocking history for tiger muskie in lowland lakes and rivers in the Panhandle Region, northern Idaho, 1989 to 1997.

Species/Water	1989	1990	1991	1992	1993	1994 to 1996	1997
Tiger muskie							
Blue Lake	350	352	115	---	150	No stocking	145
Dawson Lake	75	110	35	---	50	(NS)	55
Freeman Lake	100	110	35	---	50	(NS)	54
Hauser Lake	1,650	1,650	550	---	600	(NS)	500
Shepherd Lake	350	352	105	---	150	(NS)	145
St. Joe River	850	924	350	---	---	(NS)	---
TOTAL	3,375	3,498	1,190	0	1,000	0	899

Table 5. Idaho state record tiger muskie caught since the program began in 1988. All fish were caught from Hauser Lake, except the first one was caught in the outlet to Hauser Lake.

Name	City	Weight	Date caught
Keith Millard	Post Falls	7 lbs 13 oz	5/21/93
Caleb Marosi	Rathdrum	9 lbs	4/20/94
Ralph Hoyt	Post Falls	12 lbs 1 oz	5/24/94
Dennis Hicks	Post Falls	17 lbs 4 oz	6/26/95
Jeff Lister	Post Falls	18 lbs 5.9 oz	6/18/97
Rodney Sala	Rathdrum	21 lbs 8 oz	7/6/97

Net Pen Cutthroat Trout

Unfortunately, the net pen rearing program for Pend Oreille Lake was discontinued in 1997. Some fish were placed in pens in October, but the lack of maintenance by volunteers and predation by otters resulted in essentially no fish being released in May. This program depends solely on the cooperation of marina operators who have the only suitable sites to anchor net pens safely over the winter. Daily fish feeding, or maintenance of automatic feeders has been done by local volunteers. Several marinas have changed ownership and there were a lack of volunteers to feed fish. Without public support, the Department does not have the personnel to rear fish at these remote sites. Cutthroat were still stocked in Pend Oreille Lake to provide a fishery, but all the fish were reared at the Clark Fork Fish Hatchery.

Mountain Lake Stocking

Thirty three mountain lakes were stocked in 1997 (Appendix C). Twenty-one lakes were stocked with westslope cutthroat trout, eight lakes were stocked with domestic Kamloops rainbow trout, and four lakes were stocked with grayling. Fish were stocked at a density of 620 fish/hectare in the majority of lakes. Grayling were stocked at densities of 700 to 2,700 fish/hectare.

LITERATURE CITED

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Horton, W. D. 1997. Lake renovation procedures manual. Idaho Department of Fish and Game, Boise.

APPENDICES

Appendix A. Even year stocking schedule for Region 1 mountain lakes.

Drainage and Lake	Code No.	Surface acres	No. stocked	Species	Substitute species
Kootenai River Drainage					
Hidden	01-103	50	12,500	K1	C2
West Fork	01-109	12	3,000	C2	K1
Long Mtn.	01-112	3	1,500	GR	None
Parker	01-113	3	1,000	GN	GR
Long Canyon (Smith)	01-115	6	3,000	GR	None
Big Fisher	01-117	10	2,500	C2	None
Trout	01-124	7	1,750	K1	C2
Pyramid	01-125	11	2,750	C2	K1
Ball Creek	01-126	6	1,500	C2	None
Little Ball Cr.	01-127	4	1,000	C2	None
Roman Nose #3	01-137	12	3,000	C2	K1
Queen	01-148	5	1,250	C2	None
Spruce	01-154	5	1,250	C2	K1
Copper	01-155	5	1,250	C2	None
Callahan	01-166	10	2,500	C2(sterile)	None
Pend Oreille Drainage					
Hunt	02-101	12	3,000	C2	None
Two Mouth #3	02-108	20	5,000	C2	None
Caribou	02-116	7.8	1,750	C2	None
Little Harrison	02-126	6.5	1,625	C2	None
Harrison	02-129	29	7,250	C2	None
Dennick	02-171	8	2,000	C2	None
Sand	02-172	5	1,250	C2	None
Caribou (Keokee Mtn.)	02-196	6.8	1,700	C2	None
Spokane Drainage					
Crater	03-133	5	2,500	GR	None
Forage	03-146	13	3,250	GN	GR
Little North Fork Clearwater Drainage					
Devils Club	06-113	4	1,000	C2	None
Big Talk	06-114	?	2,500	C2	None
Larkins	06-117	12	3,000	C2	None
Hero	06-119	4	1,000	C2	None
Heart	06-122	40	10,000	K1	None
Northbound	06-123	12	3,000	C2	None
Fawn	06-126	13	3,250	C2	None
Noseeum	06-130	4	1,000	C2	None
Steamboat	06-131	9	4,500	GR	None

Total number to be stocked:
C2 - 55,825
K1 - 24,250
GR - 11,500
GN - 4,250 (GR can be substituted for GN)
C2(sterile) - 2,500

Appendix B. Odd year stocking schedule for Region 1 mountain lakes.

Drainage and Lake	Code No.	Surface acres	No. stocked	Species	Substitute species
Kootenai River Drainage					
Hidden	01-103	50	12,500	C2	K1
Lake Mtn.(Cutoff)	01-104	7	1,750	C2	None
West Fork	01-109	12	3,000	K1	C2
Long Mtn.	01-112	3	1,500	GR	None
Parker	01-113	3	1,000	GN	GR
Long Canyon (Smith)	01-115	6	3,000	GR	None
Myrtle	01-122	20	5,000	C2	None
Pyramid	01-125	11	2,750	K1	C2
Snow	01-134	10	2,500	C2	None
Roman Nose #3	01-137	12	3,000	K1	C2
Debt	01-157	5	1,250	C2	None
Spruce	01-154	5	1,250	K1	C2
Callahan	01-166	10	2,500	C2(sterile)	None
Pend Oreille Drainage					
Hunt	02-101	12	3,000	C2	None
Standard	02-103	16	4,000	C2	None
Two Mouth #2	02-107	5	1,250	C2	None
Mollies	02-114	2	500	C2	None
Fault (Hunt Pk #1)	02-121	6	1,500	C2	None
McCormick (Hunt Pk #2)	02-122	3.1	775	C2	None
Beehive	02-128	7	1,750	C2	None
Harrison	02-129	29	7,250	C2	None
Dennick	02-171	8	2,000	C2	None
Sand	02-172	5	1,250	C2	None
Caribou (Keokee Mtn.)	02-196	6.8	1,700	C2	None
Spokane Drainage					
Crater	03-133	5	2,500	GR	None
Forage	03-146	13	3,250	GN	GR
Halo	03-147	12	3,000	C2	None
Gold	03-125	8	2,000	C2	None
Bacon	03-144	9	2,250	C2	None
Crystal	03-160	10	2,500	C2	None
Little North Fork Clearwater Drainnage					
Mud	06-118	6	1,500	K1	None
Skyland	06-125	13	3,250	K1	None
Noseeum	06-130	4	1,000	C2	None
Steamboat	06-131	9	4,500	GR	None

Total number of fish to be stocked:
C2 - 58,725 K1 - 14,750 GR - 11,500 GN - 4,250 (GR can be substituted for GN)
C2(sterile) - 2,500

Appendix C. Number and species of fish (fry except where noted) stocked into mountain lakes in Region 1 from 1985 to 1996.

Lake (code)	Surface acres	Year stocked	Number stocked	Rate (fish/acre)	Stock of fish	Comments
KOOTENAI RIVER DRAINAGE						
Hidden	50	1986	6,000	120	Westslope cutthroat	
(1-103)		1987	12,500	250	Westslope cutthroat	
		1988	12,096	242	Kamloops rainbow	
		1989	3,082	62	Kamloops rainbow	
		1989	12,495	250	Westslope cutthroat	
		1990	12,928	258	Kamloops rainbow	
		1991	12,500	250	Westslope cutthroat	
		1992	8,440	169	Kamloops rainbow	
		1993	12,000	242	Westslope cutthroat	
		1994	12,500	250	Hayspur rainbow	
		1995	12,500	250	Westslope cutthroat	
		1997	12,500	250	Westslope cutthroat	
Lake Mountain	7	1987	1,750	250	Westslope cutthroat	
(Cuttoff)		1989	1,750	250	Westslope cutthroat	
(1-104)		1991	1,750	250	Westslope cutthroat	
		1995	1,750	250	Westslope cutthroat	
		1997	1,754	250	Westslope cutthroat	
West Fork	12	1986	4,495	375	Westslope cutthroat	
(1-109)		1987	3,000	250	Westslope cutthroat	
		1988	3,007	250	Westslope cutthroat	
		1989	3,087	257	Kamloops rainbow	
		1990	3,000	250	Westslope cutthroat	
		1991	3,000	250	Kamloops rainbow	
		1992	3,000	250	Westslope cutthroat	
		1993	3,006	250	Kamloops rainbow	
		1994	3,000	250	Westslope cutthroat	

Appendix C. Continued.

Lake (code)	Surface acres	Year stocked	Number stocked	Rate (fish/acre)	Stock of fish	Comments
West Fork (cont)		1995	3,000	250	Westslope cutthroat	
		1996	1,757	146	Westslope cutthroat	
		1997	3,000	250	Westslope cutthroat	
Long Mtn. Mountain	3	1987	1,000	333	Grayling	
(1-112)		1990	1,500	500	Grayling	
		1991	1,500	500	Grayling	
		1992	664	331	Grayling	
		1993	1,500	500	Grayling	
		1995	1,505	501	Westslope cutthroat	
		1996	1,039	346	Golden trout	
Parker	3	1986	1,225	408	Golden trout	
(1-113)		1988	1,002	334	Grayling	
		1990	1,410	470	Golden trout	
		1991	1,500	500	Grayling	
		1992	265	122	Grayling	
		1993	1,042	347	Grayling	
		1995	1,000	333	Grayling	
		1996	500	166	Grayling	
		1996	4,517	1,505	Golden trout	
Long Canyon	6	1987	2,000	333	Grayling	
(Smith)		1988	3,000	500	Grayling	
(1-115)		1990	3,000	500	Grayling	
		1991	1,000	167	Grayling	
		1993	704	117	Grayling	
		1995	3,000	500	Grayling	
		1997	980	163	Grayling	
Big Fisher	10	1987	2,500	250	Westslope cutthroat	
(1-117)		1990	2,500	250	Westslope cutthroat	
		1992	2,500	250	Westslope cutthroat	

Appendix C. Continued.

Lake (code)	Surface acres	Year stocked	Number stocked	Rate (fish/acre)	Stock of fish	Comments
Big Fisher (cont)		1994	2,500	250	Westslope cutthroat	
		1996	2,514	251	Westslope cutthroat	
Myrtle	20	1987	5,000	250	Westslope cutthroat	
(1-122)		1989	5,000	250	Westslope cutthroat	
		1991	4,953	248	Westslope cutthroat	
		1993	5,075	254	Westslope cutthroat	
		1995	5,000	250	Westslope cutthroat	
		1997	5,000	250	Westslope cutthroat	
Trout	7	1986	1,721	246	Westslope cutthroat	
(1-124)		1987	1,751	250	Westslope cutthroat	
		1988	1,743	250	Westslope cutthroat	
		1990	1,750	250	Westslope cutthroat	
		1992	1,750	250	Kamloops rainbow	
		1994	1,750	250	Kamloops rainbow	
Pyramid	11	1986	2,741	249	Westslope cutthroat	
(1-125)		1987	2,750	250	Westslope cutthroat	
		1988	2,752	250	Westslope cutthroat	
		1989	2,750	250	Kamloops rainbow	
		1990	2,765	251	Westslope cutthroat	
		1991	2,750	250	Kamloops rainbow	
		1992	2,750	250	Westslope cutthroat	
		1993	2,805	255	Kamloops rainbow	
		1994	1,750	250	Westslope cutthroat	
		1995	4,000	364	Westslope cutthroat	Requested 250/ac
		1996	2,762	251	Westslope cutthroat	
		1997	2,752	250	Kamloops rainbow	
Ball Creek	6	1986	1,498	250	Westslope cutthroat	
(1-126)		1988	1,500	250	Westslope cutthroat	
		1990	1,500	250	Westslope cutthroat	

Appendix C. Continued.

Lake (code)	Surface acres	Year stocked	Number stocked	Rate (fish/acre)	Stock of fish	Comments
Ball Creek (cont)		1992	1,500	250	Westslope cutthroat	
		1994	1,000	167	Westslope cutthroat	
		1996	1,511	252	Westslope cutthroat	
Little	4	1986	956	239	Westslope cutthroat	
Ball Creek		1988	1,000	250	Westslope cutthroat	
(1-127)		1990	1,000	250	Westslope cutthroat	
		1992	1,000	250	Westslope cutthroat	
		1994	1,500	375	Westslope cutthroat	
		1996	1,003	251	Westslope cutthroat	
Snow		1987	2,500	250	Westslope cutthroat	
(1-134)	10	1989	2,400	240	Westslope cutthroat	
		1991	2,500	250	Westslope cutthroat	
		1993	2,500	250	Westslope cutthroat	
		1995	2,500	250	Westslope cutthroat	
		1997	2,500	250	Westslope cutthroat	
Roman N. #1	16	1993	390	24	Bull trout	Brook trout control
(1-135)						
Roman N. #2	7.9	1993	162	21	Bull trout	Brook trout control
(1-136)		1996	3,077	389	Westslope cutthroat	Cutthroat stocked by
Roman N. #3	12	1986	3,000	250	Westslope cutthroat	
(1-137)		1987	3,000	250	Westslope cutthroat	
		1988	3,000	250	Westslope cutthroat	
		1989	3,000	250	Kamloops rainbow	
		1990	1,000	83	Westslope cutthroat	size 2
		1991	3,150	262	Kamloops rainbow	
		1992	1,305	109	Westslope cutthroat	size 2
		1993	3,000	250	Kamloops rainbow	
		1994	3,772	314	Westslope cutthroat	772 were size 2
		1995	3,000	250	Westslope cutthroat	size 1

Appendix C. Continued.

Lake (code)	Surface acres	Year stocked	Number stocked	Rate (fish/acre)	Stock of fish	Comments
Roman N. #3 (cont)		1996	3,002	250	Westslope cutthroat	
		1997	3,025	252	Kamloops rainbow	
Queen	5	1986	1,250	250	Westslope cutthroat	
(1-148)		1988	1,250	250	Westslope cutthroat	
		1990	1,250	250	Westslope cutthroat	
		1992	1,250	250	Westslope cutthroat	
		1996	1,265	253	Westslope cutthroat	
Debt	5	1985	1,250	250	Westslope cutthroat	
(1-150)		1989	1,250	250	Westslope cutthroat	
		1991	1,250	250	Westslope cutthroat	
		1993	1,250	250	Westslope cutthroat	
		1995	1,250	250	Westslope cutthroat	
		1997	1,263	252	Westslope cutthroat	
Spruce	5	1986	1,250	250	Westslope cutthroat	
(1-154)		1987	1,250	250	Westslope cutthroat	
		1988	1,250	250	Westslope cutthroat	
		1989	1,265	253	Westslope cutthroat	
		1990	1,250	250	Westslope cutthroat	
		1991	1,247	250	Kamloops rainbow	
		1992	1,250	250	Westslope cutthroat	
		1993	1,250	250	Kamloops rainbow	
		1994	1,360	272	Westslope cutthroat	
		1995	1,269	254	Westslope cutthroat	
		1996	1,265	254	Westslope cutthroat	
		1997	1,250	250	Kamloops rainbow	
Copper	5	1986	1,250	250	Westslope cutthroat	
(1-155)		1988	1,247	250	Westslope cutthroat	
		1990	1,250	250	Westslope cutthroat	
		1992	1,250	250	Westslope cutthroat	

Appendix C. Continued.

Lake (code)	Surface acres	Year stocked	Number stocked	Rate (fish/acre)	Stock of fish	Comments
Copper (cont)		1994	1,360	273	Westslope cutthroat	
		1996	1,265	253	Westslope cutthroat	
Callahan	10	1987	2,522	252	Westslope cutthroat	Stocking discontinued in 1996 due to MFWP concern about redband rainbow trout genetic integrity in Callahan Creek drainage. Shift to sterile cutthroat stocking.
(Smith)		1988	2,500	250	Westslope cutthroat	
(1-160)		1992	2,563	251	Westslope cutthroat	
		1993	2,514	250	Westslope cutthroat	
		1995	2,500	250	Westslope cutthroat	
Estelle	5	1988	1,075	215	Brown trout	Test control
(1-167)		1990	500	100	Brown trout (size	of stunted
		1992	150	30	Brown trout (size	brook trout
PEND OREILLE DRAINAGE						
Hunt	12	1985	3,000	250	Westslope cutthroat	
(2-101)		1986	3,000	250	Westslope cutthroat	
		1987	3,033	253	Westslope cutthroat	
		1988	3,000	250	Westslope cutthroat	
		1989	5,000	417	Westslope cutthroat	
		1990	3,000	250	Westslope cutthroat	
		1991	3,000	250	Westslope cutthroat	
		1992	3,023	252	Westslope cutthroat	
		1993	3,000	250	Westslope cutthroat	
		1994	3,000	250	Westslope cutthroat	
		1995	3,020	252	Westslope cutthroat	
		1996	2,993	249	Westslope cutthroat	
		1997	3,000	250	Westslope cutthroat	
Standard	16	1985	4,000	250	Westslope cutthroat	
(2-103)		1987	3,962	248	Westslope cutthroat	
		1989	4,000	250	Westslope cutthroat	

Appendix C. Continued.

Lake (code)	Surface acres	Year stocked	Number stocked	Rate (fish/acre)	Stock of fish	Comments
Standard (cont.)		1991	4,000	250	Westslope cutthroat	
		1993	4,020	251	Westslope cutthroat	
		1995	4,000	250	Westslope cutthroat	
		1997	4,000	250	Westslope cutthroat	
Two Mouth # 1	?				Discontinued stocking due to winter kill in 1981	
Two Mouth # 2	5	1987	1,269	254	Westslope cutthroat	
(2-107)		1989	1,265	253	Westslope cutthroat	
		1991	1,250	250	Westslope cutthroat	
		1993	1,327	265	Westslope cutthroat	
		1995	1,250	250	Westslope cutthroat	
		1997	1,251	250	Westslope cutthroat	
Two Mouth # 3	20	1986	5,000	250	Westslope cutthroat	
(2-108)		1988	5,000	250	Westslope cutthroat	
		1990	5,000	250	Westslope cutthroat	
		1992	5,000	250	Westslope cutthroat	
		1994	5,000	250	Westslope cutthroat	
		1996	5,002	250	Westslope cutthroat	
Mollies	2	1987	508	254	Westslope cutthroat	
(2-114)		1989	500	250	Westslope cutthroat	
		1991	500	250	Westslope cutthroat	
		1993	503	251	Westslope cutthroat	
		1997	858	429	Westslope cutthroat	
Caribou	6.8	1987	1,750	257	Westslope cutthroat	
(near West Fk. Mtn)		1988	1,750	257	Westslope cutthroat	
(2-116)		1990	1,750	257	Westslope cutthroat	
		1992	1,750	257	Westslope cutthroat	
		1994	1,750	257	Westslope cutthroat	
		1996	3,050	449	Westslope cutthroat	

Appendix C. Continued.

Lake (code)	Surface acres	Year stocked	Number stocked	Rate (fish/acre)	Stock of fish	Comments
Fault	6	1987	1,500	250	Westslope cutthroat	
(Hunt Peak #1)		1989	1,553	259	Westslope cutthroat	
(2-121)		1991	2,275	379	Westslope cutthroat	Rec'd McCormick Lake
		1993	1,500	250	Westslope cutthroat	
		1995	1,500	250	Westslope cutthroat	
McCormick	3.1	1985	780	252	Westslope cutthroat	
(Hunt Peak #2)		1987	775	250	Westslope cutthroat	
(2-122)		1989	805	260	Westslope cutthroat	
		1991	816	263	Westslope cutthroat	
		1993	775	250	Westslope cutthroat	
		1997	777	250	Westslope cutthroat	
Little Harrison	6.5	1987	1,625	250	Westslope cutthroat	
(2-126)		1988	1,625	250	Westslope cutthroat	
		1990	1,625	250	Westslope cutthroat	
		1992	1,625	250	Westslope cutthroat	
		1994	1,625	250	Westslope cutthroat	
		1996	1,621	250	Westslope cutthroat	
Beehive	7	1986	1,803	258	Westslope cutthroat	
(2-128)		1987	1,750	250	Westslope cutthroat	
		1989	2,164	309	Westslope cutthroat	
		1991	1,750	250	Westslope cutthroat	
		1993	1,750	250	Westslope cutthroat	
		1995	1,805	250	Westslope cutthroat	
		1997	1,754	250	Westslope cutthroat	
Harrison	29	1986	6,870	237	Westslope cutthroat	
(2-129)		1987	7,264	250	Westslope cutthroat	
		1988	7,250	250	Westslope cutthroat	
		1989	7,479	258	Westslope cutthroat	
		1990	7,250	250	Westslope cutthroat	

Appendix C. Continued.

Lake (code)	Surface acres	Year stocked	Number stocked	Rate (fish/acre)	Stock of fish	Comments
Harrison (cont.)		1991	7,246	250	Westslope cutthroat	
		1992	7,250	250	Westslope cutthroat	
		1993	7,250	250	Westslope cutthroat	
		1994	7,250	250	Westslope cutthroat	
		1995	7,266	250	Westslope cutthroat	
		1996	7,273	250	Westslope cutthroat	
		1997	7,274	250	Westslope cutthroat	
Beaver	5	1990	500	100	Brown trout (size	Test control of
(2-130)		1992	150	30	Brown trout (size	stunted brook trout
Dennick	8	1986	2,500	312	Westslope cutthroat	
(2-171)		1987	2,000	250	Westslope cutthroat	
		1988	2,000	250	Westslope cutthroat	
		1989	2,064	258	Westslope cutthroat	
		1990	2,000	250	Westslope cutthroat	
		1991	2,000	250	Westslope cutthroat	
		1992	2,000	250	Westslope cutthroat	
		1992	150	19	Brown trout	Stocked by mistake
		1994	2,000	250	Westslope cutthroat	
		1995	2,000	250	Westslope cutthroat	
		1996	2,012	250	Westslope cutthroat	
		1997	1,994	250	Westslope cutthroat	
Sand	5	1986	1,250	250	Westslope cutthroat	
(2-172)		1987	1,250	250	Westslope cutthroat	
		1988	1,247	250	Westslope cutthroat	
		1989	1,250	250	Westslope cutthroat	
		1990	1,250	250	Westslope cutthroat	
		1991	1,250	250	Westslope cutthroat	
		1992	1,250	250	Westslope cutthroat	
		1993	1,026	205	Westslope cutthroat	

Appendix C. Continued.

Lake (code)	Surface acres	Year stocked	Number stocked	Rate (fish/acre)	Stock of fish	Comments
Sand (cont.)		1994	1,250	250	Westslope cutthroat	
		1995	1,250	250	Westslope cutthroat	
		1996	1,275	255	Westslope cutthroat	
		1997	1,248	250	Westslope cutthroat	
Porcupine	13	1986	1,075	83	Mt. Lassen rainbow	
(2-182)		1987	--	--	Not stocked	Road washed out
		1988	600	46	Mt. Lassen rainbow	
		1989	690	53	Mt. Lassen rainbow	
		1990	750	58	Catchable rainbow	
		1991	--	--	Not stocked	Road washed out
		1993	387	30	Kamloops rainbow	
		1994	303	23	Hayspur rainbow	
		1997	1,035	81	Kamloops rainbow	
Moose	16.5	1987	1,000	61	Brown trout	Test control on
(2-185)		1988	4,515	274	Brown trout	stunted brook trout
		1990	500	30	Brown trout	size 3
		1992	500	30	Brown trout	size 2
Antelope	16	1982	5,032	314	Westslope cutthroat	
(2-190)		1989	1,155	72	Mt. Lassen rainbow	size 3
		1990	1,000	63	Catchable rainbow	
		1990	200	12	Westslope cutthroat	broodstock
		1991	2,000	125	Westslope cutthroat	size 2
		1991	1,100	69	Eagle Lake rainbow	size 3
		1991	50	3	Creston rainbow	broodstock
		1992	1,363	85	Hayspur rainbow	size 3
		1993	1,387	87	Hayspur rainbow	size 3
		1994	1,000	62	Hayspur rainbow	size 3
		1995	2,834	177	Hayspur rainbow	size 3
		1996	3,052	191	Unspecified	size 3

Appendix C. Continued.

Lake (code)	Surface acres	Year stocked	Number stocked	Rate (fish/acre)	Stock of fish	Comments
Antelope (cont.)		1996	1,014	63	Westslope cutthroat	broodstock
		1997	5,151	322	Kamloops rainbow	size 3
		1997	2,111	132	Brook trout	surplus fingerlings
Caribou	6.8	1986	1,500	220	Westslope cutthroat	
(near Keokee Mtn)		1987	1,704	250	Westslope cutthroat	
(2-196)		1988	1,722	253	Westslope cutthroat	
		1989	1,700	250	Westslope cutthroat	
		1990	1,700	250	Westslope cutthroat	
		1991	1,700	250	Westslope cutthroat	
		1992	1,750	257	Westslope cutthroat	
		1993	1,700	250	Westslope cutthroat	
		1994	1,700	250	Westslope cutthroat	
		1996	1,700	250	Westslope cutthroat	
		1996	1,304	192	Westslope cutthroat	
SPOKANE RIVER DRAINAGE						
Elsie	10	1986	3,024	302	Catchable rainbow	size 3
(3-119)		1987	2,000	200	Hayspur rainbow	size 3
		1988	4,050	405	Hayspur rainbow	size 3
		1989	2,856	284	Mt. Lassen rainbow	size 3
		1990	3,000	300	Eagle Lake	size 3
		1991	3,516	350	Hayspur rainbow	size 3
		1992	4,020	402	Hayspur rainbow	size 3
		1993	4,045	404	Hayspur rainbow	size 3
		1994	2,264	226	Hayspur rainbow	size 3
		1995	4,042	404	Hayspur rainbow	size 3
		1996	1,012	101	Kamloops rainbow	size 3
		1997	2,526	253	Kamloops rainbow	size 3

Appendix C. Continued.

Lake (code)	Surface acres	Year stocked	Number stocked	Rate (fish/acre)	Stock of fish	Comments
Lower Glidden	12	1986	3,011	251	Catchable rainbow	size 3
(3-123)		1987	3,277	273	Hayspur rainbow	size 3
		1988	3,001	250	Hayspur rainbow	size 3
		1989	2,836	236	Mr. Lassen rainbow	size 3
		1990	1,775	148	Catchable rainbow	size 3
		1991	1,986	165	Hayspur rainbow	size 3
		1992	3,534	295	Hayspur rainbow	size 3
		1993	4,005	334	Hayspur rainbow	size 3
		1994	2,212	184	Hayspur rainbow	size 3
		1995	4,042	337	Hayspur rainbow	size 3
		1996	4,032	336	Kamloops rainbow	size 3
		1997	2,517	210	Kamloops rainbow	size 3
Upper Glidden (3-124)	10	1993	180	18	Bull trout	Brook trout control
Gold	3	1987	750	250	Westslope cutthroat	
(3-125)		1989	750	250	Westslope cutthroat	
		1991	750	250	Mt. Lassen rainbow	
		1993	500	167	Kamloops rainbow	Shallow, need to evaluate
Revett (3-130)	12	1993	309	26	Bull trout	Brook trout control
Crater	5	1987	2,100	420	Grayling	Reserve for grayling.
(3-133)		1988	2,500	500	Grayling	
		1990	2,500	500	Grayling	
		1991	2,500	500	Grayling	
		1993	2,500	500	Grayling	
		1995	1,750	340	Grayling	
		1996	3,105	621	Grayling	
		1997	1,500	300	Grayling	

Appendix C. Continued.

Lake (code)	Surface acres	Year stocked	Number stocked	Rate (fish/acre)	Stock of fish	Comments
Dismal	?	1987	249	--	Hayspur rainbow	size 3
(3-138)		1988	260	--	Mt. Lassen rainbow	size 3
		1988	260	--	Hayspur rainbow	size 3
		1989	225	--	Mr. Lassen rainbow	size 3
		1990	250	--	Catchable rainbow	size 3
		1991	243	--	Hayspur rainbow	size 3
		1992	250	--	Hayspur rainbow	size 3
		1993	230	--	Hayspur rainbow	size 3
		1994	265	--	Hayspur rainbow	size 3
		1995	252	--	Kamloops rainbow	size 3
		1996	250	--	Kamloops rainbow	size 3
		1997	252	--	Kamloops rainbow	size 3
Bacon	9	1985	2,255	250	Westslope cutthroat	
(3-144)		1987	2,250	250	Westslope cutthroat	
		1989	2,250	250	Westslope cutthroat	
		1991	2,250	250	Westslope cutthroat	
		1993	2,250	250	Westslope cutthroat	
		1995	2,320	258	Westslope cutthroat	
		1997	2,250	250	Westslope cutthroat	
Forage	13	1987	3,150	242	Golden trout	Reserve for golden trout
(3-146)		1988	3,250	250	Grayling	
		1989	2,000	154	Grayling	
		1990	3,250	250	Golden trout	
		1992	600	46	Grayling	
		1993	3,250	250	Grayling	
		1995	670	52	Grayling	
		1996	3,250	250	Grayling	
		1997	700	54	Grayling	

Appendix C. Continued.

Lake (code)	Surface acres	Year stocked	Number stocked	Rate (fish/acre)	Stock of fish	Comments
Halo	12	1985	3,010	251	Westslope cutthroat	
(3-147)		1987	3,000	250	Westslope cutthroat	
		1989	3,000	250	Westslope cutthroat	
		1991	3,000	250	Westslope cutthroat	
		1993	3,000	250	Westslope cutthroat	
		1995	3,118	260	Westslope cutthroat	
		1997	3,000	250	Westslope cutthroat	
Crystal	10	1987	2,510	251	Westslope cutthroat	
(3-160)		1988	2,500	250	Westslope cutthroat	
		1989	2,500	250	Westslope cutthroat	
		1991	2,500	250	Westslope cutthroat	
		1993	2,500	250	Westslope cutthroat	
		1995	2,520	250	Westslope cutthroat	
		1997	2,500	250	Westslope cutthroat	
LITTLE NORTH FORK OF THE CLEARWATER DRAINAGE						
Devils Club	4	1986	1,000	250	Westslope cutthroat	
(6-113)		1988	1,000	250	Westslope cutthroat	
		1991	1,093	273	Westslope cutthroat	
		1992	1,000	250	Westslope cutthroat	
		1996	1,000	250	Westslope cutthroat	
Big Talk	?	1986	1,500	--	Westslope cutthroat	
(6-114)		1988	2,500	--	Westslope cutthroat	
		1990	2,737	--	Westslope cutthroat	
		1992	2,500	--	Westslope cutthroat	
		1996	2,500	--	Westslope cutthroat	
Larkins	12	1986	3,000	250	Westslope cutthroat	
(6-117)		1988	3,000	250	Westslope cutthroat	

Appendix C. Continued.

Lake (code)	Surface acres	Year stocked	Number stocked	Rate (fish/acre)	Stock of fish	Comments
Larkins (cont)		1990	3,278	273	Westslope cutthroat	
		1996	3,000	250	Westslope cutthroat	
Mud	6	1987	1,500	250	Westslope cutthroat	
(6-118)		1989	1,500	250	Westslope cutthroat	
		1991	1,500	250	Mt. Lassen rainbow	
		1993	1,500	250	Hayspur rainbow	
		1995	1,500	250	Trout Lake rainbow	
		1997	1,500	250	Kamloops rainbow	
Hero	4	1986	1,000	250	Westslope cutthroat	
(6-119)		1988	1,000	250	Westslope cutthroat	
		1990	1,093	273	Westslope cutthroat	
		1992	1,000	250	Westslope cutthroat	
		1996	1,000	250	Westslope cutthroat	
Heart	40	1986	10,000	250	Westslope cutthroat	
(6-122)		1990	10,000	250	Mt. Lassen rainbow	
		1992	10,000	250	Mt. Lassen rainbow	
		1994	3,865	97	Kamloops rainbow	
		1996	10,006	250	Kamloops rainbow	
Northbound	12	1986	3,000	250	Westslope cutthroat	
(6-123)		1988	3,000	250	Westslope cutthroat	
		1990	3,278	273	Westslope cutthroat	
		1992	3,000	250	Westslope cutthroat	
		1994	500	42	Westslope cutthroat	
		1996	3,000	250	Westslope cutthroat	
Skyland	13	1987	3,250	250	Westslope cutthroat	
(6-125)		1989	3,250	250	Westslope cutthroat	
		1991	3,250	250	Mt. Lassen rainbow	
		1993	3,250	250	Hayspur rainbow	
		1995	3,250	250	Trout Lake rainbow	

Appendix C. Continued.

Lake (code)	Surface acres	Year stocked	Number stocked	Rate (fish/acre)	Stock of fish	Comments
Skyland (cont)		1997	3,250	250	Kamloops rainbow	
Fawn	13	1986	3,250	250	Westslope cutthroat	
(6-126)		1988	3,250	250	Westslope cutthroat	
		1990	3,565	274	Westslope cutthroat	
		1992	3,250	250	Westslope cutthroat	
		1996	3,250	250	Westslope cutthroat	
Noseeum	4	1985	1,008	252	Westslope cutthroat	
(6-130)		1987	1,000	250	Westslope cutthroat	
		1989	1,000	250	Westslope cutthroat	
		1991	1,000	250	Westslope cutthroat	
		1993	1,000	250	Westslope cutthroat	
		1995	1,007	252	Westslope cutthroat	
Noseeum		1997	1,000	250	Westslope cutthroat	
Steamboat	9	1986	2,000	222	Grayling	Reserve for grayling.
(6-131)		1988	4,500	500	Grayling	
		1989	2,000	222	Grayling	
		1990	4,500	500	Grayling	
		1991	3,500	389	Grayling	
		1992	650	72	Grayling	
		1993	4,500	500	Grayling	
		1995	3,000	333	Grayling	
		1996	5,135	571	Grayling	
		1997	2,700	300	Grayling	

Submitted by:

Jim Fredericks
Regional Fishery Biologist

Jim Davis
Regional Fishery Biologist

Ned Horner
Regional Fishery Manager

Charles E. Corsi
Environmental Staff Biologist

Approved by:

Greg Tourtlotte
Regional Supervisor